Learning to Learn: teacher research in the Zone of Proximal Development

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This article draws on an action research project in primary and secondary schools which was funded through the Campaign for Learning, and supported by Newcastle University with a focus on 'Learning to Learn'. This is a potentially useful concept for teachers and academics as attempts are made to move beyond curriculum-driven and assessment-dominated education towards inclusive and lifelong learning. At the end of the academic years 2003–2004 and 2004–2005, a total of 43 teachers from schools involved in researching Learning to Learn completed questionnaires and were interviewed about the progress of their individual research projects in the context of the wider programme. They were asked to discuss issues of autonomy and control, expectations and motivation and how change was manifesting itself in their contexts. Clear messages about the need for teacher ownership of the research balanced with the need for scaffolding emerged from the analysis.

Introduction: how the Learning to Learn project works

The Learning to Learn Phase 3 Evaluation is a research project funded through the independent charity Campaign for Learning (CfL) and facilitated by the Centre for Learning and Teaching at Newcastle University. This project involves 33 primary and secondary schools in three local education authorities (LEAs), representing a wide range of socio-economic contexts across England (Higgins *et al.*, 2005, 2006). All of the schools have implemented action research interventions under the umbrella term of 'Learning to Learn' (L2L). Working definitions of L2L exist, drawing on ideas of metacognition, Thinking Skills, self-regulation, self-efficacy and self-esteem (see, for example, Claxton, 2002). However, within this project definitions remain fluid and changing, because through the process of research and through the connections made as part of the project the teachers themselves are creating new understandings of what L2L is in practice. This article presents a snapshot of these developing

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understandings and provides an exploration of the teachers' experience of and practice in this action research process.

Learning to learn is a well-used phrase in contemporary educational debates. It is sometimes equated with lifelong learning or at least the foundational elements in lifelong learning skills (Cornford, 2002) and is widely acknowledged to require the development of metacognitive skills and techniques (e.g. Scraw, 1998; Sternberg, 1998) as well as the development of self-regulation more broadly. In policy terms, learning to learn is firmly part of the skills agenda supporting employability and increased economic competitiveness (Rawson, 2000). The complexity of what is involved can perhaps best be captured in the working definition used by Hargreaves (2005, p. 7): 'learning to learn is not a single entity or skill, but a family of learning practices that enhance one's capacity to learn'. With this emphasis on learning practices, rather than a more individual psychological description on skills or even a focus on personal dispositions (e.g. Perkins *et al.*, 1993; Claxton & Carr, 2004), the academic focus has shifted towards learning activities and communities of practice (e.g. Wenger, 1998) as outlined in some of the publications from the Teaching and Learning Research Programme, a major United Kingdom (UK) research initiative (see, for example, James & Brown, 2005).

Claxton's four generations of 'teaching learning' (Claxton, 2002) provide a valuable way of distinguishing some of the practices that can often be clustered under the general banner of 'Learning to Learn' (see Figure 1). The aim of the Campaign for Learning's project is clearly designed to support and explore the fourth stage of such approaches.

One further perspective that we have found useful is Dewey's (1944) notion of learning as a tool and the development of knowledge as a 'pragmatic technology' (Hickman, 1990) which can be seen to apply at both pupil and teacher levels.

> Learning as eagerness to learn, learning how to learn, includes, of course, learning use of books. But men [*sic*] who learn use of telescopes and microscopes do not learn to look at them. They learn to look through them so as better to see other things, and the things they

First generation	Raising attainment
	Good teaching is effective delivery of content knowledge
Second generation	Developing study skills
	Hints, tips and techniques
Third generation	Emotional and social factors
	Characteristic ways of learning
	Concerned with the how of teaching
Fourth generation	Involvement of students in the process
	Concerned with how students can be helped to help themselves
	Teachers themselves involved in becoming better learners
	Developmental and cumulative

Figure 1.   Four generations of 'teaching learning'

learn to see are the things that exist and act in the common world around them…but which without the aid of these devices go unseen. (Dewey, 1944, p. 8)

For the purposes of this research project we have acknowledged the complexity in this area and some of the competing agendas and tensions, but have pragmatically adopted the Campaign for Learning's definition: 'a process of discovery about learning. It involves a set of principles and skills which, if understood and used, help learners learn more effectively and so become learners for life. At its heart is the belief that learning is learnable'. We see this as applying to pupils, teachers and ourselves as a research team.

As part of the Learning to Learn project teachers were invited to explore the different approaches they understood as being consonant with the Learning to Learn heading within their school or classroom. This common aim gave the teachers a starting point, but as teachers are often unrecognised innovators and, by the nature of their jobs, problem solvers, the tendency has been for the project brief to be interpreted and understood in a range of ways. This introduces a level of unpredictability for the university researcher; however this transfer of the locus of control regarding the focus and direction of the research to the teachers is essential in achieving the project aims (Higgins & Leat, 1997). The developmental process of action research, which over a three-year project allows several research cycles (Figure 2) to take place, is much more than the acquisition of a research 'skill set', encompassing personal perspective transformation, cultural change within schools and the broadening of external networks of collaboration, communication and critical challenge.

The input of the university team evolves as the action research process unfolds: the definition of the problem is wholly 'owned' by individual teachers or teams within schools and the university team scaffold the development of hypotheses by encouraging close focus on *what will change* and *what change will look like*. Our input on research methods informs the action plan and shapes it to the extent that schools are required to triangulate their data through the use of multiple evaluation tools,
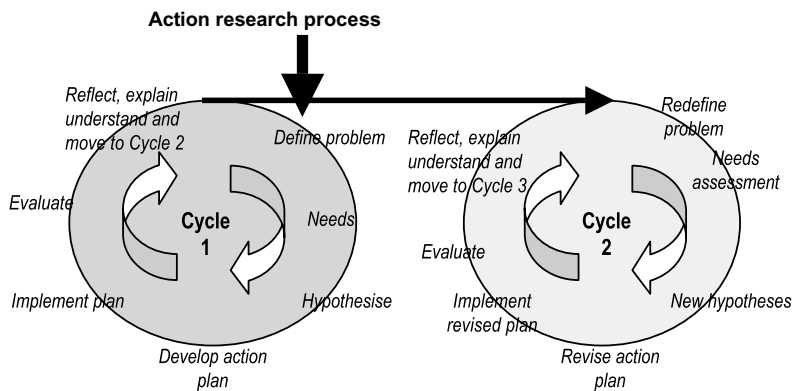

Figure 2.   Action research in Learning to Learn—adapted from Kemmis and McTaggart (1988)

including at least one quantitative method (see for example Woolner *et al.*, 2005). In this way, though we are imposing our values from the academic community on teacher-researchers, we are simultaneously sharing the language and culture of research, giving procedural autonomy to teachers through a shared understanding of the expectations of this 'craft' (Lave & Wenger, 1991; Ecclestone, 2002) (see Figure 2).

Using Stenhouse's (1981) model of 'systematic enquiry made public', the teachers have been encouraged to initiate changes they feel are appropriate and to investigate them in such a way that is meaningful to them and colleagues. The participant teachers work with the intended audience for their enquiry identified as a 'sceptical colleague' who needs to be convinced of the impact of the chosen approach. The university team support and facilitate this process of action research through a combination of electronic and face-to-face communication. The project has a password-protected web site which gives advice on different research methods, the triangulation of methods and the writing up of the research (Falzon *et al.*, 2004). This is complemented by a commitment from the team, through a 'buddy' system, to be available via email or telephone with assistance and answers to teachers' questions. In addition, the project manager is available for teachers via email and telephone to provide support or to act as a conduit to other colleagues for specialist advice. Face-to-face support occurs once a term. In the autumn and summer the teachers gather together in their LEA groups for a collaborative professional development session, the content of which provides a mixture of new ideas, research methods and opportunities to share problems and successes and to set their work in a wider context. Each January in 2004–06 a two-day residential conference took place with invited speakers, including those from other major research projects like the Teaching and Learning Research Programme (e.g. James & Brown, 2005). On all these occasions the university team took a lead role in providing input on different aspects of the project, as well as supporting dialogue between schools about Learning to Learn and the research process. Through these systems, the university team gave guidance and opinion which may impact on the action research process in schools. However, at no point was there any intention to divert the locus of control away from the teachers and the context of the schools.

Practical support in the development of questionnaires or other tools and in the analysis of data was offered to those schools who wanted it, with a commitment to swift response which was a crucial component of the network. When learners are engaged in new, risk-taking activities, it is important that support is felt to be close, responsive and individually tailored. Just as scaffolding in the classroom is mediated through the quality of the relationship (Bruner, 1984), so, we believe, scaffolding teacher-researchers is dependent upon the authenticity of the relationship between schools and university. The role of the network in supporting teacher-researchers should not be underestimated and it is an important feature underpinning the success of Learning to Learn. As Figure 3 demonstrates, there are a range of contacts for the individual teacher: at school, LEA, project and beyond. The needs will necessarily be different in each context: in July 2004, nine of our teachers were working alone in

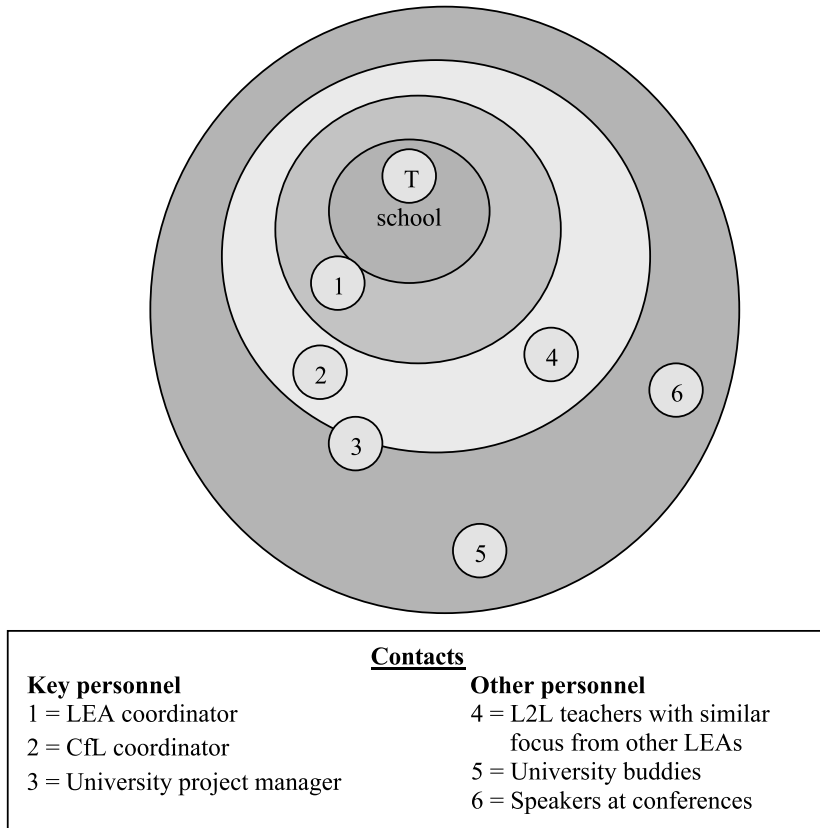|	Contacts	
Key personnel		**Other personnel**
1 = LEA coordinator		4 = L2L teachers with similar focus from other LEAs
2 = CfL coordinator		5 = University buddies
3 = University project manager		6 = Speakers at conferences

Figure 3.   Learning to Learn support structures

their schools, 18 were working with one or two colleagues and six were involved in whole-school Learning to Learn projects. Indeed, a movement towards the engagement of the whole school has been observed as the project progressed.

Our commitment in Learning to Learn (L2L) is to the teachers' voice and this article reflects the process whereby teachers reconcile their experience with their evolving ways of describing it (Elliot, 1991). From this perspective, teacher development and their development of practice is an evolving hermeneutic and open process in which teachers do not operate *upon* children and classroom events but rather change *with* them. Thus language does not reflect meaning or reality but produces it as teachers respond to, discuss and make sense of past classroom events and use language to inform future action. Brown and Jones (2001) refer to this process of change as the 'successive substitution of accounts of experience'. The successive accounts or narratives which teachers tell relate to and re-contextualise each other and the accounts of others. In this sense, meaning is provisional and always 'deferred' (Derrida, 1981) as teachers operate within relations of history, language, politics and society. Nevertheless, each successive re-contextualisation provides a

clearer 'working definition' of L2L which allows teachers to judge their development against their ideals and to further refine their research questions. There is great resonance for teachers in pragmatically conceptualising their learning in action (Dewey, 1933) and further, to see this learning as both socially constructed and socially supported (Vygotsky, 1978).

In this article, we present teachers' accounts of their work, though we recognise the partiality inherent in our own interpretations of such accounts. Nevertheless, this analysis acts as provisional markers in time for us as university researchers, in which we co-construct with teachers clearer definitions of learning and better questions for future research, both at school and project level.

Teachers' perspectives on their involvement in Learning to Learn

In Year 1 of the project, an interview schedule was devised by the research team with the aim of gathering the main themes and experiences of L2L as perceived by the participating teachers. In Year 2, we devised a schedule which would enable us to validate the thematic analysis from the first year and to explore teachers' own learning experiences. These themes are discussed in detail elsewhere (Higgins *et al.*, 2005, 2006). Interview schedules were sent to all the schools in the project (see Appendix 1) prior to the interview taking place. (See Table 1 for interview samples.) This meant, since we were trying to elicit their considered opinions of the progress of the research and the underlying principles of L2L, teachers had the opportunity to discuss the issues in the interview with colleagues and to reflect on them before the telephone interview took place.

The interviews were conducted on the telephone by a team of staff from the Centre for Learning and Teaching at times arranged to suit the teachers' work schedules during the summer terms of 2004 and 2005. Interviews varied in length between 15 and 45 minutes and were all tape-recorded and transcribed before analysis. The teachers were asked a series of questions which were designed to yield their experiences of being involved in action research: the extent to which they believed their constructs of the reality of the research project and their visions had overlapped, how much independence and control teachers felt they had over their projects and how they perceived the relationships which had developed between the schools, the CfL and the university. During the Year 1 interviews, the teachers were asked to refer to their schedules and place themselves on scales of 1–10 (see schedule, Appendix 1) and the interviewers then explored the reasons for these positions. In the Year 2 interviews, teachers were asked to talk about a key learning experience, using a narrative

Table 1.   Interview samples Year 1 and Year 2

	No. of teachers interviewed	Male	Female	Primary	Secondary
Year 1	20	3	17	15	5
Year 2	24	4	20	13	7

approach (Bruner, 1990, 1991). We have drawn on these accounts for evidence of network support and scaffolding.

One of the key 'balancing acts' for this project has been supporting the teachers' autonomy in designing research which fits their practice and their context, while at the same time developing a project-wide coherence about Learning to Learn. Three of the questionnaire items were designed to address this: the extent to which each individual project tallied with the teachers' ideas of L2L and the extent to which teachers felt that the university or the CfL were shaping their understanding of L2L. As Figure 4 below indicates, teachers were confident that their projects and L2L were coherent.

However, there was no clear link between how confident teachers were about the coherence of their research with what they perceived to be the overarching concepts of L2L and the extent to which they felt their ideas about L2L were influenced by other agencies. As Figure 5 suggests, the university and the Campaign were seen by the majority of teachers to have a similar impact, with only four teachers making a significant distinction, three in favour of the Campaign, one for the university. Overall, the influence of the 'external agencies' was quite high, with only two teachers considering that they had had little impact on their vision of L2L.

A key aspect of successful action research is the extent to which individual teachers have a sense of control over their actions and the two graphs (Figures 6 and 7) reflect our attempts to tap into these feelings: the first is a straightforward measure of control, the second is a focus on the extent to which expectations and experience match up. Taken in conjunction, these two measures give a sense of how far teachers are operating under conditions which allow them to locate control of the research process within themselves: 55% gave a score of eight or more in relation to personal control and 80% gave a score of at least five. It is apparent from a comparison of Figures 6 and 7 that those teachers with less sense of control over their research are
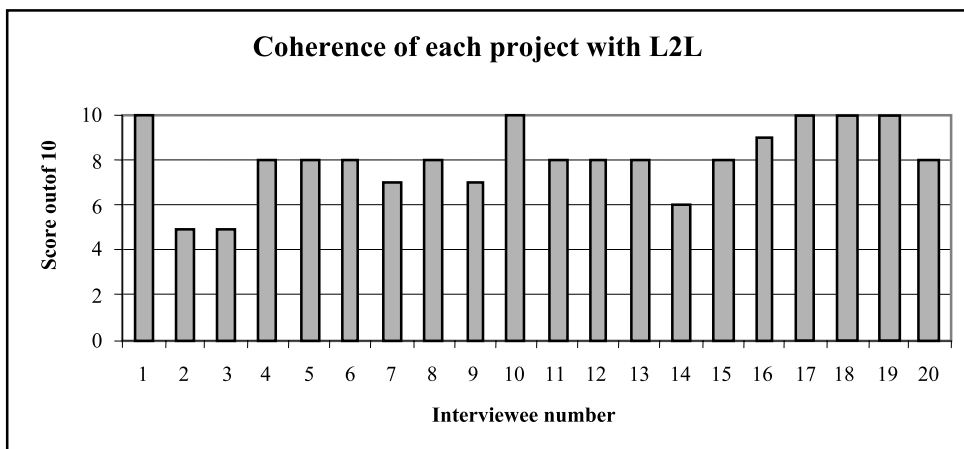

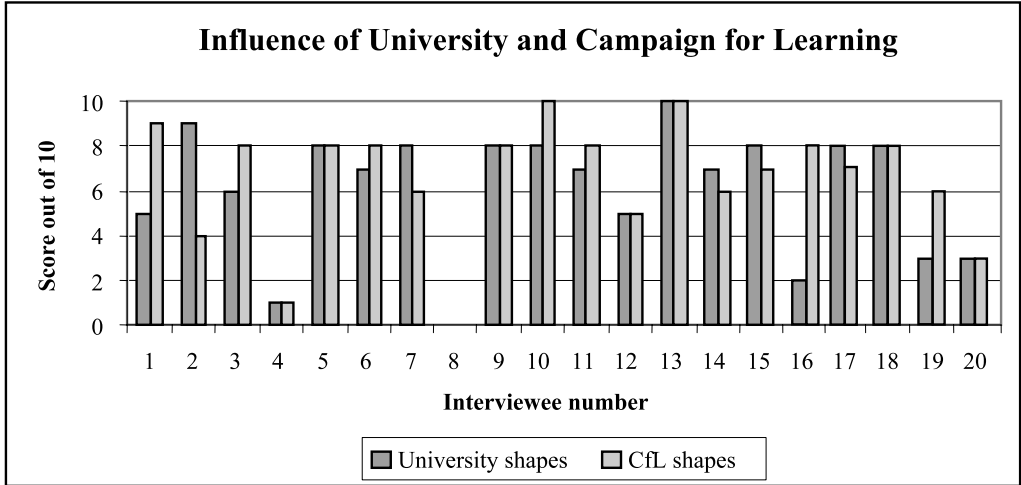Figure 4.   Does your research project fit within your conception of L2L?

Figure 5.   To what extent do the university and the CfL shape your vision of L2L?

more likely to be those whose expectations of the process have been overturned by experience.

As Figure 8 indicates, the school-based action research is reported to be making teachers reflect on their whole practice. This indicates that in a self-determined research project with pedagogical purchase, it is likely that one's whole teaching experience will be reflected upon. By making small, self-identified changes that are meaningful to the teacher, other areas of practice and interaction come to be highlighted. This process of 'productive dissonance' (Baumfield, 2005) is one of the most powerful outcomes of action research, as it stimulates the cycle (Figure 2) to
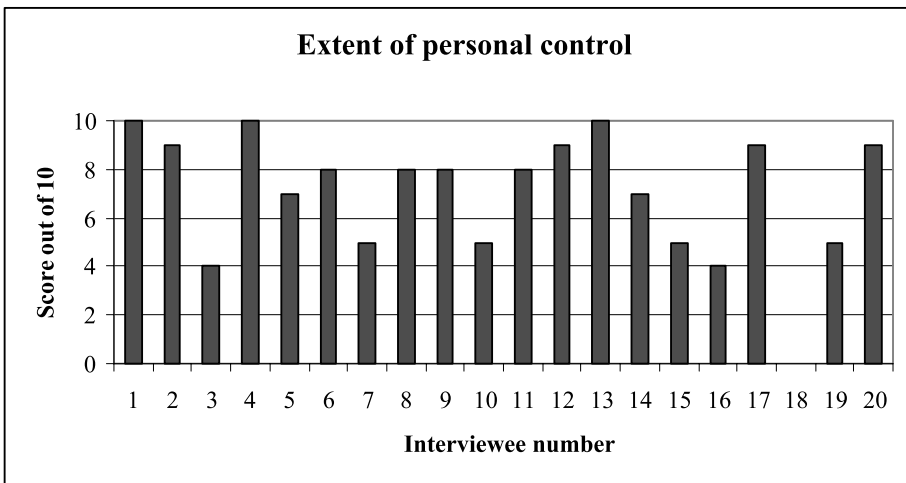
Figure 6.   How far do you personally feel in control of your research aims?
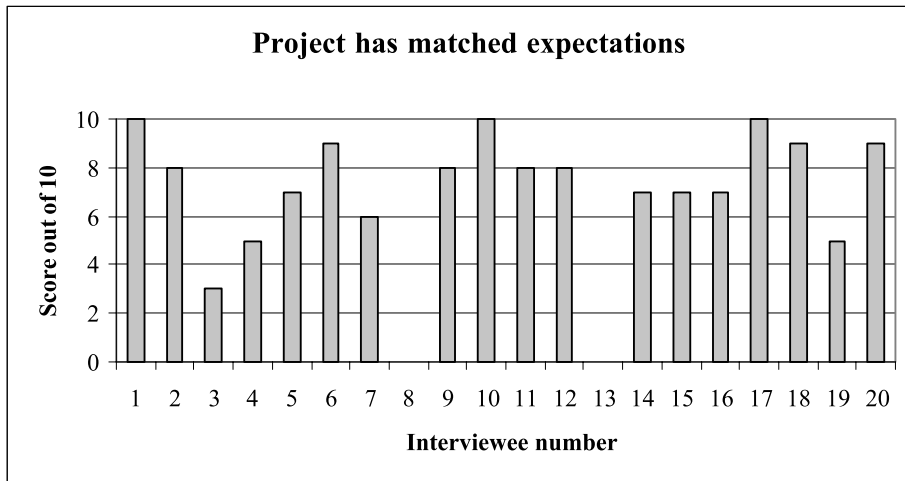
Project has matched expectations

Figure 7.   How far has this experience matched your expectations of what an L2L research project should be?

continue. This project, like many others in the action research/teacher development paradigm, has an overall aim of helping practitioners to increase their levels of reflection. The waves of curriculum innovation and the tendency to categorise educational approaches in subject-specific or context-specific ways which have characterised school life in the UK over the last two decades have, arguably, militated against the productive dissonance associated with teacher innovation and research in the past. The pressures of curriculum change and policy-driven innovations have made it much harder for teachers to get beyond implementation to reflection. Even when evaluative work is done, it focuses on issues of product rather than process. For
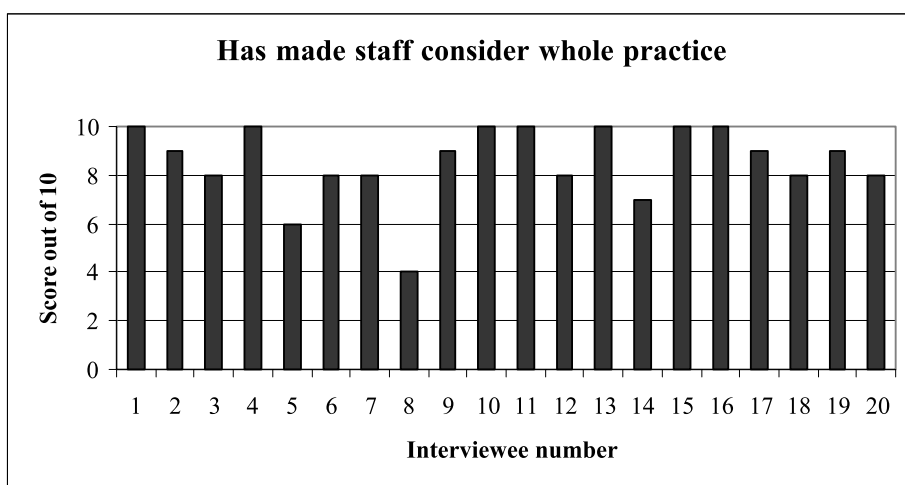
Has made staff consider whole practice

Figure 8.   How much has this project helped you consider your whole practice?

example, changes towards more whole-class teaching and more structured lessons associated with the introduction of National Literacy and Numeracy Strategies in all primary schools in England (Hardman *et al.*, 2003; Smith *et al.*, 2004) have been mainly evaluated in terms of their effects on literacy teaching and children's attainment in literacy, rather than in the context of teachers' perspectives on their many pedagogic strategies.

Moreover, L2L is not meant to be an initiative but a process that continues, a view explicitly supported by the teachers in the interviews, who overwhelmingly feel that the research process has 'spread'—both to other areas of practice for involved teachers and also to other staff within the school. There is more chance of teachers changing their practice if those changes are owned rather than imposed. However, as we discuss later, certain other conditions are necessary.

Evidence of network support/scaffolding

During the second-year interviews we asked the teachers to describe a key learning experience from L2L; how this new knowledge had affected their teaching and learning and to talk about ways in which they had been able to share this new knowledge or understanding. These answers have enabled us to look at the support and communication networks which surround the L2L teachers, in a necessarily impressionistic way, since these accounts relate to only one instance of learning. Nevertheless, the results give us some guidance as we attempt to track the development of teachers' contacts and the range of sources and networks they use.

As Table 2 indicates, many of the L2L teachers rely for support on their immediate colleagues in the L2L team, though the role of the head teacher in providing a supportive environment is key as one primary teacher commented: 'teaching and learning is really high up on my head's agenda, therefore that creates a climate at school'. The increase in whole-school approaches in Year 2 of the project is reflected in the interviews, the sense that schools are at the 'tipping point' of getting a majority of colleagues engaged:

> It's like that famous diagram thing where you've got the four quadrants, and in the top you've got something like completely disinterested and then below that you've got will listen and listen about it, then a group who'll try something and a group who completely accept it on the top right … and you don't get to start off at completely disinterested and go straight to acceptance, there's like a 'u' that goes to all four of them and people will be somewhere along that 'u'. Well I know I've got … quite a few people who are in the trying, and I've got some people now who are in, well okay you can talk to me about it, it's not threatening me anymore. I don't have anybody left in the not interested. (Secondary teacher)

Increasingly within L2L, 'whole school' means more than all the teaching staff and teachers often talked about their support and network coming from parents and children.

Beyond the school, the role of local networks is important to these teachers, both in terms of gaining perspectives beyond individual sites but also in the discussion of

Table 2.   Network data from Year 2 interviews

Range	Contact/support	Number
Within school	*Core team*	9
(2 teachers **only** within school)	*Head teacher*	6
	Other colleagues	1
	Whole staff	4
	Parents	5
	Children	4
Within the LEA	*LEA advisers*	4
(3 teachers **only** within LEA)	*Local networks*	10
Campaign for Learning and	*INSETs (in-service*	3
Newcastle University	*education and training)*	
	National Conference	11
	Newcastle team	7
	Project manager	1
Other national networks or input		5

Note: numbers sum to more than 23 because teacher mentioned multiple supports and contacts

L2L and other initiatives which helps them to make the connections between their new learning and other aspects of their roles:

> for at least those of us who are involved with learning to learn and other projects, some of the Heads of Dept who are certainly Advanced Skills Teachers, is that we … it's a bit like a Venn diagram because you have so many initiatives going on that overlap. This afternoon I'm going to a University of the First Age meeting, it's … what I'm going to be hearing there it's going to be close to what we're saying together and sometimes you're thinking … was it Investors in Excellence I did this, you know or somewhere else … and I think that's a good thing. (Secondary teacher)

A large number of teachers mentioned the value of the national conference to their own learning, both in terms of access to national speakers and research training but also as a forum for developing their thinking with colleagues from around the country. Overall, the majority of interviewees were aware of the role that the research team have played in developing their ideas and research skills and the quality of the support and speed of response was a common theme:

> they have been superb, I know as soon as I send an email off to somebody … I get an email straight back the next day, they are really on the ball, doesn't matter when I send it. (Primary teacher)

> looking at the whole research process for me personally has been you know … has certainly been the most learning I've ever had to do … and it's been a real learning curve … how you go about a research project. The whole thinking of your hypothesis and then data collection, planning it out, it's been one of the more interesting parts of it. (Primary teacher)

As the L2L project progresses, we have hypothesised that teachers' networks will expand, that their range of contacts will increase and that their sense of themselves as active professionals with an engagement beyond their own classroom or school will develop. Only two teachers talked of their learning as rooted solely in the school and the majority saw themselves as engaged in a series of dialogues within and beyond the LEA:

> being able to go away as well and spend time at the residential, and meet up with people from outside of our county, as you say our LEA does have some great networks and support, but being able to meet up with other people as well and share what they're doing and what we're doing, and forge links that way, that's been so useful and again in terms of having a research team at the university too, just to run things through and make sure that we're approaching things from the right way and that we're being thorough as well about it, that's been really useful too. (Secondary teacher)

Discussion

The assumption that educational research can improve professional practice is not unproblematic; Bourdieu and Wacquant (2001) assert that internationally there is a demise of the voice of the autonomous, critical intellectual which is attributable to the rise of a 'pseudo-intellectual imperialism' in government discourses used to justify policy choices. This suggests there is a need to re-examine the role of practitioner research, particularly in a climate in which teachers are increasingly under pressure to accord their practice with government-led agendas and standards discourse. Our model of working with schools prioritises the teachers' agenda: we do not aspire, individually or collectively, to find universal solutions to be 'rolled out' over diverse contexts, rather it is our aim to support teachers, using research tools which can be embedded in practice and which are common to other teacher-researchers, allowing for degrees of comparison. It is fundamental to this project that the teachers are critically investigating aspects of their own practice which are pertinent to them and that the outcomes are made available to their peers.

Our project engages with Hammersley's (2004) assertion that action and research in education are conflicting processes: his contention that enquiry must either be subordinated to action, or vice versa, is an important call to reassess the relationship between schools and universities engaged in collaborative research. Hammersley argues that in the action research it is likely that one of the two fundamental components, action and inquiry, will be subordinated to the other. If inquiry is subordinated to action he sees one of the dangers as being that the falsity of key assumptions is overlooked, leading to a failure to acknowledge underlying generative processes and wider social forces. He outlines a range of contradictions that can arise when inquiry is combined with other activity, such as the effect costs may be judged too high whilst the value of the inquiry is recognised. It is a strange list in that it is couched largely in terms of 'might' and 'may'. No empirical basis for this list is suggested and one might respond in all cases that 'it might not'.

There are a number of grounds on which we would argue that Hammersley is overly pessimistic, both generally and in the more specific case of well-supported networks of action researchers as described in the L2L project. In this specific case the cumulative exposure to research methods training has sharpened awareness of the need to make knowledge claims on secure foundations—through the use of trialling methods, the need for triangulation and increasing awareness of the role of control groups. Further, the feedback provided both in developing each year's projects and writing them up helps overcome the worst excesses of false assumptions. Thirdly there is a degree of distributed research coordinated by the university which results in accumulated data on attitudes and attainment, using the online questionnaire completed by all L2L pupils and national assessment data. This accumulation and wider perspective of analysis helps protect against false assumptions—for example, in the case of the attitude data, some individual schools were concerned by decreases in attitudinal scores until they understood the wider picture—that pupils' attitudes to school decline over time, particularly in secondary schools, and it is the relative rate of decline which is the indicator, rather than a reversal of this trend (Muijs, 1997).

As well as recognising that action research might miss the significance of wider social forces, there is a need to recognise too that teachers are changed by their participation in such activity. This might be understood in a number of ways, but one of the most salient is interpreting their engagement in action research within the project as the use and appropriation of cultural tools. There are teaching tools, research tools and communication tools, all of which at times and in various sub-populations are used for common purpose. As Boreham and Morgan (2004), in drawing on the work of Leont'ev (1978), have argued in the context of organisations, there is an array of social practices which are attached to a tool. Thus it is not the tool which is of itself significant but the culture of its use that has meaning. We are heavily influenced and grow in our thinking and actions through the tools that we adopt in the pursuit of common goals. As Boreham and Morgan (p. 320) express it: 'The development and transmission of knowledge and skill in a community can then be explained by progressive acquisition of socially constructed capacities which result from carrying out operations with these tools'.

Our evidence presented in this article suggests:

1. that the university and CfL did have a significant influence on the teachers;
2. however, despite this there remained a considerable sense of control and coherence of vision.

This suggests that the project has achieved that fine balance between autonomy and guidance. In practical terms the support mechanisms for teachers have been described, but how does one make sense of this pattern? For this perspective we want to explore the concept of scaffolding. Wood *et al.* (1976) introduced the term in the context of an adult helping a child to perform a task that they could not alone and unaided. Soon scaffolding was linked to Vygotsky's (1978) concept of the Zone of Proximal Development—the gap between what the child could achieve alone and

what they could achieve when guided by a more capable peer or an adult. Scaffolding was concerned with the nature of this guidance or tutoring and several roles were hypothesised:

1. recruitment of the child's interest;
2. establishing and maintaining an orientation to task-relevant goals;
3. highlighting critical features of the task that might be overlooked;
4. demonstrating how to achieve goals; and
5. helping to control frustration.

There are clear parallels in the relationship between the university, in particular, and the teachers. Recruitment of interest was not critical here as the motivation already resided within the schools, but there has been a role in maintaining and extending that interest especially when teachers are bombarded by other demands (Apter, 2001). The production of an annual case-study report by schools (for examples, see the project web site: www.ecls.ncl.ac.uk/l2l/main/casestudies2004.asp) has been the focus of points 2–4 above. Teachers work towards the report throughout the school year; this process is facilitated through a series of graded steps and support and feedback from 'buddies' in the university. The communication loop between the teachers and the university team, by means of email and telephone, means that there is a critical framework through which the report and the teachers' ideas, which are being made concrete within its text, are mediated. The report has been the medium of maintaining focus and communication. The report, therefore, can be seen as a boundary object (Engestrom *et al.*, 1995) that intersects the worlds of the teachers and the university team.

Wood and Wood (1993) in reviewing the concept of scaffolding highlighted some of the criticisms of the concept. They mention the nature of the relationship between the adult and the child and that too little was said about the nature of the communication mechanism. These probes are relevant to our idea building. The two dominant forms of communication in the relationship are electronic and face to face. Although electronic communication is more frequent, it is perhaps still the junior partner, a necessary but not sufficient condition for the relationship to develop. We suspect that the electronic communication is dependent on trust developed through face-to-face meetings and capitalised on by the email exchanges. We are currently analysing the change in style and tone of these emails over the project duration.

It is relevant to note however that trust is a principal concept in the theory of social capital (Baron *et al.*, 2000), which has been so influential in the social sciences in recent years. Social capital resides in the quality of relationship between members of networks, clubs, kinship groups and communities and confers advantages in the form of resources that individuals can mobilise through being part of social networks. We would theorise that if scaffolding can be considered to operate in adult relationships, then trust will be a key component. Attempting new and difficult tasks as a teacher, such as classroom research and report writing, provides a level of challenge that is potentially threatening to the self-system, if only because of the risk of failure.

We have already stressed the importance of trust as a condition, as well as the practical support exemplified in the L2L network. We should not forget the importance

of resources, which often equates to time (Brookhart & Loadman, 1992). Thus time has been referred to as working space (Clement & Vandenberghe, 2000), which is the calm away from the frenetic, intense action of school life when reflection is possible, values and goals made explicit and reappraised, and challenge introduced. In such circumstances there can be some confidence that the worst excesses of top-down reform are avoided and that the possible triviality of some bottom-up innovation is made less likely. Gallas (1998, cited in Zeichner, 2003) relates several factors identified as keys to success of action research study groups. These include voluntary participation over an extended period, valuing the knowledge that teachers bring to their activity, help to problematise that knowledge, a focused mission in the joint activity shared by all participants and autonomy in the process. As Zeichner points out these approaches seem to have the effect of rekindling excitement and enthusiasm for teaching, often with direct links to improvements in students' attitudes, behaviour and learning. Further such teachers become more attuned to student-centred learning and listening more acutely to student voice. However, while we do not know the precise ingredients for the recipe, we are reasonably certain that allowing teachers to define and develop their enquiries in response to their perceptions of their own context is critical. This does mean that there are blind alleys on some occasions but such false starts might reduce with the evolution of such an approach to school improvement.

Conclusions

It has been argued in this article that the Newcastle University/Campaign for Learning project schools partnership has provided a form of scaffolding for teachers doing action research, in particular encouraging them to make independent use of the 'cultural tools' of research. Thus as the teachers conduct the various phases of their action research they have been acquiring tools which through their use within this community are changing those teachers. There is evidence also that this effect is not confined to those who are directly engaged with the project but that this is also spreading to influence their peers. These tools, we believe, are highly significant in bringing about change. This is not a simple process, but one that is both iterative and complex. Just as the teachers themselves have been changed, so they in turn have changed the people and institution around them. This effect appears to be more marked in primary schools, perhaps reflecting their smaller size and more integrated structures. Such an effect is increasingly being recognised in the assessing the quality of action research. Furlong and Oancea (2005) were commissioned by the Economic and Social Research Council in the UK to help develop criteria for judging the quality of applied and practice-based research. One of the four families of criteria that they expound for judgement is *capacity building and value for people*, which recognises how such research (which specifically includes action research) changes people through collaboration and partnership, increasing their receptiveness, reflexivity, virtuousness and morality.

Action research cannot be judged solely on its contribution to knowledge creation. We do mean that it is weak in this respect. However, especially where there is a degree of infrastructural support to overcome some of the tensions and difficulties that

teacher researchers face, it has the potential to change schools and colleges. This is not an easy process but it is important for the future role of research in informing choices and developments in social domains. However, this is unlikely to occur through crude models of dissemination, in which research outcomes are offered to practitioners in formats that are too generalised to have meaning. It is more likely if teachers as researchers adopt research (and teaching) tools which through widespread use come to shape thinking and action.

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Appendix 1.   Interview schedule

Over the next year a common thread we will be exploring will be definitions of L2L, so we want to get a snapshot of people's views at this stage of the project. This means that you don't have to come up with the 'definitive answer' but you can tell us what your ideas are at the moment:

- What do **you think** are 3 key characteristics of a L2L school?

- What do **you think** are 3 key things a L2L teacher does?

- What do **you think** are 3 key things can a L2L pupil do?

Next, we want to know how you feel about your research project and L2L:

- Does your research project fit within your conception of L2L?
    - 1-10 scale (where 1= not at all and 10= exactly)
- How? (3 points with concrete examples)

- How far do you personally feel in control of your research aims?
    - 1-10 scale (where 1= not at all and 10= completely)

- To what extent do you feel the University vision of L2L is shaping your project?
    - 1-10 scale (where 1= not at all and 10= completely)
- Why? (Give 3 concrete examples)

- To what extent do you feel the Campaign for Learning vision of L2L is shaping your project?
    - 1-10 scale (where 1= not at all and 10= completely)
- Why? (Give 3 concrete examples)

- What are the greatest influences/impacts on your project?

- How much has this project helped you consider your whole practice?
    - 1-10 scale (where 1= not at all and 10= in great depth/breadth)

- Has being involved in the Project impacted on your awareness of your professional needs?
    - List

- What were your expectations of the L2L Phase 3 project?
    - Give 3 examples

- How far has this experience matched these expectations of what a L2L research project should be?
    - 1-10 scale (where 1= not at all and 10= completely)