THE CREATION OF KNOWLEDGE NETWORKS

Collaborative Enquiry for School and System Improvement

David Jackson, Director of Networked Learning, NCSL

Paper presented to the CERI/OECD/DfES/QCA/ESRC Forum
"Knowledge Management in Education and Learning"
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Introduction

This 'think-piece' is built around an initiative emanating from England's National College for School Leadership – ***Networked Learning Communities***. The paper opens with an exploration of the importance of networks as an organisational form that can stimulate innovation and facilitate knowledge transfer, leading on to a brief explanation of Networked Learning Communities.

Following that, two interconnected themes are explored:

- The first relates to the centrality of collaborative enquiry, not only as a vehicle for the improvement of teaching and learning, but also as a means of fostering professional development, leadership learning, organisational learning and school-to-school learning.
- The second presents the case for enquiry and knowledge-creation as essential elements in the leadership of change and in capacity building at the school, network and system level.

In particular, the piece will explore some of the key issues surrounding the use of knowledge-creation through enquiry as an energy source for school improvement and as a means of generating professional knowledge networks.

The Role of Networks in Supporting Innovation[1]

The argument is built upon the premise that, in education as in other fields, networks have a key role to play in supporting innovation and development. Accordingly, networks need to be regarded as support structures for innovative schools – facilitative, too, of the dissemination of both 'good process' and 'good practice', overcoming the traditional isolation of schools, and challenging traditional hierarchical system structures through lateral leadership and learning norms.

In the past, most school systems have operated almost exclusively through individual units set within hierarchically designed structural forms – typically LEAs or School Districts. Such isolation may have been appropriate during times of stability, but during times of rapid and multiple change there is a need to 'tighten the loose coupling', to increase collaboration and to establish more fluid knowledge flow in order to foster responsive structures. Networks are a means of doing this – and one for which there is an ample evidence base from other public and private sector organisations seeking to respond to the twin challenges of the knowledge economy and the associated ubiquitousness of change (OECD, 2000).

Networks are locations in which specialised knowledge can be created and transferred within collaborative team contexts. Senge (1990) emphasises team learning and team skills rather than individual skills and individual learning as being the key to competitiveness. The OECD research (cited above) suggests that the move towards learning organisations is reflected in changes both in firms'

[1] This section of the paper is adapted, with permission, from 'Schooling for Tomorrow: Innovation and Networks', Hopkins, D. (2001), OECD/CERI.

internal organisation (internal networking) and in inter-firm relationships (external networking). Within firms, the accelerating rate of change makes multi-level hierarchies and strict borders between functions inefficient. The report goes on to suggest that to build schools as learning organisations may be one of the major challenges for the future. A hypothesis that we bring to the Networked Learning Communities initiative is that school-to-school networks may, in fact, be both the catalyst and context for the internal redesign required to generate learning networks within schools.

Networks do not just facilitate innovation. By offering the possibility of new ways of working, they can also be viewed as being an innovation in themselves. This is particularly important in contemporary educational systems, as there is currently a tendency to reduce district level intervention and support for schools. It could well be argued that these support structures - the role that local education authorities or school districts, local universities, and other agencies have traditionally played - are more effective at buttressing the status quo than initiating/supporting change or transferring knowledge across the system.

We know that school development benefits from external facilitation (Fullan and Miles, 1992), but it is also evident that what is needed is not outmoded institutions not geared up to the task, but more creative and responsive patterns of working within and between schools. Networks are, then, increasingly being seen as a means of facilitating innovation and change as well as contributing to large-scale reform (Hopkins, 2001; Demos, 2001, OECD, 2000). They offer the potential for redesigning local system structures by promoting different forms of collaboration, linkages, and multi-functional partnerships. Networks offer the potential for flexible and adaptive patterns that enable stakeholders to make focussed and purposeful connections and to build synergies around shared priorities and common knowledge-creating activities. The system emphasis becomes less about exercising control (which is both impossible in an increasingly autonomous context and antithetical to creativity and innovation), but to harness the interactive and creative capability of system-wide forces.[2]

In September 2000, the OECD/CERI Seminar held in Lisbon brought together five of the world's most advanced educational networks, with a view to drawing theory from their collective practice. The arguments so far outlined in this paper and the discussions during the seminar concur in the belief that Networks have the potential to support educational innovation and change by:

- Providing a focal point for the dissemination of good practice, the generalisability of innovation and the creation of 'action oriented' knowledge about effective educational practices.
- Keeping the focus on the core purposes of schooling, in particular in creating and sustaining a discourse on teaching and learning – and the organisational redesign factors that will support more powerful learning.
- Enhancing the skill of teachers, leaders and other educators in knowledge-creation, change agent skills and managing the change process.
- Building capacity for continuous improvement at the local level, and in particular fostering leadership and creating professional learning communities, within and between schools.
- Ensuring that systems of pressure and support are integrated, not segmented. For example, professional learning communities incorporate pressure and support in a seamless way.
- Acting as a link between the centralised and decentralised schism resulting from many contemporary policy initiatives. In particular in contributing to policy coherence horizontally and vertically.

It is these points, and the additional aspiration of generating morally purposeful partnerships between teachers and schools creating knowledge with and on behalf of one another, that led us to establish the Networked Learning communities initiative.

Networked Learning Communities (NCSL, 2001) – a Framework for Knowledge Networks

[2] For a further discussion of these points see, Fullan, M. (2000) 'The Return of Large Scale Reform' **Journal of Educational Change** Vol. 1 No 1 pp 1-23.

A Networked Learning Community (NLC) is a cluster of schools working in partnership with others to enhance the quality of pupil learning, professional development, and school-to-school learning. We have drawn from the OECD Lisbon Seminar in defining NLCs as follows:

> *Networked Learning Communities are purposefully led social entities that are characterised by a commitment to quality, rigour and a focus on outcomes. They are also an effective means of supporting innovation in times of change. In education, Networked Learning Communities promote the dissemination of good practice, enhance the professional development of teachers, support capacity building in schools, mediate between centralised and decentralised structures, and assist in the process of re-structuring and re-culturing educational organisational systems.*

The NLC programme is designed to improve learning opportunities for pupils and to support the development of schools as professional learning communities. It places teachers, leaders and schools at the heart of innovation and knowledge creation within the profession and enables the development of local, context-specific practices and solutions that can be explained and interpreted by schools in other contexts – at the heart of knowledge networks. NLCs will act as critical friends to one another and each will additionally elect to have an external partner, which may include Higher Education Institutions (HEIs), Local Education Authorities (LEAs) or Community Groups.

The Programme itself is a partnership initiative involving the National College for School Leadership (NCSL), Department for Education and Skills (DfES), the General Teaching Council (GTC) and the Teacher Training Agency (TTA). In this way the system is seeking to mirror networking, collaborative and knowledge sharing values. It is a joined up initiative. NCSL will act as the facilitator of learning and knowledge transfer between Networks and take responsibility also for spreading good practice from the programme to a wider audience.

More specifically, each NLC will comprise a group or cluster of schools working in partnership:

- to raise standards by improving the learning of pupils and staff, and by supporting school-to-school learning
- to develop leadership for learning by developing and harnessing the leadership potential of a wide range of people
- To build capacity for growth and continuous improvement by schools enquiring into their practice and by sharing both process and product outcomes.

They will use collaborative processes such as:

- developing and incorporating a wide variety of approaches to Professional Development including coaching, mentoring and enquiry into teaching and learning;
- supporting and recognising practitioner enquiry and enquiry-based leadership as a means of creating knowledge and generating theory about learning and school improvement, grounded in the analysis of professional practice and informed by the application of professional judgement;
- engaging teachers with the theoretical perspectives and research findings of others, in both academic and practitioner communities
- seeking accreditation for both internal and external processes;
- providing a range of leadership opportunities through the ownership of knowledge-creating processes, the leadership of enquiry partnerships;
- modelling collaborative leadership learning through explicit headteacher learning;
- challenging thinking, benchmarking practice and incorporating external expertise;
- utilising diversity and uniqueness of context for and on behalf of all schools;
- making sense of local, regional and national initiatives through collaboration;
- establishing networking systems, processes and relationships geared towards knowledge-sharing and sustainability; and
- targeting concrete outcomes that will attract widespread interest and take up.

By 'working smarter together, rather than harder alone' (a key mantra for the initiative), learning from each other and with each other, an NLC will: improve the learning of pupils and staff, and school-to-school learning; develop enquiry-based leadership opportunities and leadership for learning; build capacity for growth and continuous improvement – and knowledge about the process; provide a supportive context for risk-taking and creativity, and the confidence to 'turn and face the danger' – to take charge of change and thrive.

Each Network will identify a pedagogically grounded *'Learning Focus'*. This will be a unifying theme, which will underpin the early activity undertaken by the Network. It will be the initial vehicle through which NLCs will build knowledge through enquiry into and study of practice and will begin to change organisational processes in support of new ways of working. This Learning Focus should respond innovatively to local, regional and/or national initiatives and be something of relevance to other schools and other networks, in order to facilitate school-to-school transfer of knowledge – both about the area of focus and the change issues involved in the improvement of practice.

This is a design-based innovation. Learning networks are being promoted to enrich professional practice as they create and transfer knowledge to support improvements in teaching and learning and organisational restructuring. In achieving this goal, schools within NLCs will:

- Collaborate around the study of teaching and learning – within and between schools.
- Promote and recognise practitioner enquiry – creating knowledge together.

- Engage with and learn from theory and research generated by involvement in the enquiry process to build the knowledge base about what works
- Develop and utilise a wide variety of approaches to CPD including: coaching, mentoring, induction programmes, shadowing, intervisitations and internal and external programmes of learning that qualify for accreditation
- Draw theory from enquiry into practice with a view both to implementing the learning from this process, and to generating artefacts such that they can be shared with other schools and networks.

The initiative is of its time. If it is successful in its aim of advancing professional knowledge creation and knowledge networks, it will be because it is able to capitalise upon a theoretical, practical and policy context that provides fertile ground for transformation.

The Contextual Background

There is a long educational history behind action research and school-based enquiry, dating back to the work of Kurt Lewin (1947, 1948) and his followers (e.g. Chein, 1948, Rowan, 1974 and Lippett, 1985)[3]. More recently, there is a growing international evidence base of its centrality to school renewal and restructuring efforts (Glickman, 1993; Seashore Louis, 1994; Garmston & Wellman, 1997; Joyce *et* al, 1999) as well as to classroom improvement. And there is an increasingly varied range of voices calling for a reappraisal of the role of research in school development. Some have centred upon the significance of teacher involvement because of their 'user community' role (Hargreaves, 1994) or because 'only teachers are in a position to create good teaching' (Stenhouse, 1975, 1980); other perspectives have criticised the unacceptable divide between the communities of research and those of practice (Kennedy, 1997; Hargreaves, 1999; Hillage *et al*, 1998); many recognise the nature of teachers as professionals and their necessarily central role in the development of schools (Stoll, 1999; Halsall & Carter, 1998; Wheatley, 1999). These imperatives are also supported by a more grounded perspective - which is that we cannot improve our schools until we know our schools; that the route to knowing is collaborative enquiry; and that the regenerative processes of knowledge-creation, knowledge-conceptualisation, knowledge-transfer and knowledge-utilisation are at the heart of organisational and professional learning.

[3] 'Understanding the Role of Enquiry', Jackson, D. (2001), which contains an account of the history of action research and school-based enquiry, is available on the NCSL website, www.ncsl.org.uk.

A significant factor in reversing the trend for educational knowledge creation to be housed with university researchers, and in bringing the weight of theory and research about enquiry-driven school improvement back into the consciousness of school leaders, has been the massive growth since the late 1980s of educational Masters degrees, most containing significant applied research components. DETYA (1998), a major recent Australian survey, concluded that the 'largest single group' involved in educational research is school leaders and teachers involved in Masters programmes. Further, the report found that "…in terms of direct impact, the most frequently quoted example (by school Principals) of systematic educational enquiry affecting the school context was action research, because it brought immediate benefit".

In parallel, there is also evidence of increased teacher involvement in action enquiry conducted on the *outside* of the HE accreditation framework and within new communities of practice (e.g. involving LEA or School District partners alongside HE colleagues) in the UK (e.g. Myers, 1996; Carter *et al*., 1998; in Australia e.g. Harradine, 1996; Retalnick & Groundwater Smith, 1996; and Canada e.g. Stoll & Fink, 1996; Delong & Wideman,1998); and an increasing recognition of the action enquiry process as fundamental to school improvement and enhanced capacity to lead and manage change effectively (e.g. IQEA, Hopkins, D. *et al*., 1994; Joyce *et al*., 1999).

In connecting those in leadership roles with the theories and research findings of others, by introducing them to the potential of enquiry as a means of generating new knowledge and theory rooted in the analysis of practice and also, in many cases, by forging ongoing links between higher education personnel and schools, a climate and an evidence-base for enquiry-informed professional practice and organisational development has been created. That having been said, it is worth adding also that education has a huge journey still to travel in the knowledge management field if it is to be able to withstand comparisons with other sectors. Table 1 below (OECD, 2000) starkly demonstrates the current debilitating context for education.

Table 1: **Selected differences between sectors**

Dimension	**High Tech**	**Medicine**	**Education**
1. Pressures on knowledge creation, mediation and use.			
Main source of pressure for knowledge creation	Market R D	Clients R D	Politicians
Pressure to innovation from own professional culture.	Very High	Medium	Low
Priority given to knowledge creation and mediation	Very High	Medium	Low
2 Structures and resources for knowledge creation, mediation and use			
R and D expenditure	Very high	High	Low
Awareness of knowledge management ideas	High	Low	Very low
Application of knowledge management ideas	High	Low	Low
Actor networks	High	Medium	Low
Cross-specialism collaboration	High	Variable	Low
Expert – novice interactions	Very high	Mainly high	Mainly low
Overall internal networking	High	Low	Very low
Overall external networking	High	Medium	Low
Public-private collaborations	Strong	Weak	Very weak
Links with universities	Strong	Medium	Weak
Use of ICT in mediation	High	Medium	Weak
Mediation of new knowledge	Very fast	Fast	Slow
Implementation of new knowledge	Rapid	Variable	Slow

3 Outcomes of knowledge creation, mediation and use Level of success in knowledge-creation Quality of R & D Rate of innovation	 Very high High High	 High Variable Variable	 Low Low Low

There is another interesting contextual dimension in England. The relative failure of educational reform endeavours between the 1970s and 1990s to transform either the system or student achievement, together with the increasing weight of evidence cited above, has led in the last few years to a reappraisal of the role of school-based approaches and their relationship to reform strategies (Fullan and Miles, 1992). The climate has changed. The drift of national legislation in England is further supporting this. Increased centralisation has been accompanied by school level autonomies – in budgets, governance, internal policies and professional development practices. Whilst for some schools the additional burdens of accountability have been viewed as deterrents to innovation, to others they are interpreted as imperatives – and enquiry is the vehicle used not only to propel improvement, but also to unearth the evidence of success in order to meet accountability expectations. In these circumstances, teachers are noted to '*immerse themselves in real situations of reform and begin to craft their own theories of change, constantly testing them against new situations and the experiences of others'* (Fullan, 1995). Specific elements of legislation have supported such a knowledge-creating process (Beacon Schools, Specialist Schools, Training Schools, Advanced Skills Teachers); practitioner enquiry (Best Practice Research Scholarships, International Study Visits); and the study of innovation (Education Action Zones, Excellence in Cities).

The White Paper (2002) calls for - as well as a continuing emphasis upon standards and accountability – transformation. In Michael Barber's terms (2000) the process of modernizing the education system demands a transition from the 'improvement wave' of educational reform (largely dominated by the standards agenda) to the 'transformational wave', where innovation, inclusion, diversity, evidence-informed practice, knowledge-creation and transfer, professional learning communities, informed professional judgement and practice informed policy, are presented as key features of a new landscape of educational reform. Networked Learning Communities have their genesis within this contextual environment, and, it might be argued, have an important role to play in supporting school leaders as they make the transition to a vision of school leadership underpinned by such transformational imperatives (Hopkins *et al*. 2001 – Think Tank Report; NCSL - 2001 Leadership Development Framework)

Educational transformation is now a national imperative. Knowledge is the new economy in educational development, both within schools and between schools. The management of change is unavoidable. Simplistic notions of organisational restructuring are no longer sufficient – the new discourse emphasises 'transformational' objectives, which require a radical approach to both school and system-level re-design and to the leadership of the change management process itself. Meeting young people's needs for the future world is not simply a matter of doing better or more of what we have done in the past. We need to do different things or, at worst, do some of the same things differently. A move away from traditional hierarchical, constraining and debilitating structures and towards the building of leadership density and models of lateral learning (within schools and between schools) together with an emphasis upon new forms of situated learning and the conditions required to support this (Hargreaves, 2001) are increasingly being seen as key ways to unleash creativity and build capacity.

Enquiry, knowledge creation and knowledge networks provide a vehicle. The remainder of this paper will explore the nature, role and logistics of enquiry-informed school improvement processes for school, school-to-school and network-to-network learning.

The Nature of Enquiry

The word 'research' tends to bring with it associations related to rigour, reliability, validity, generalisability, ethical procedures, objectivity, scale – and so on. In reality, though, what we are talking about when engaging with school-based and school-to-school enquiry activities does not always need to conform to the same exacting standards. The concept of fitness for purpose, or 'good enough research' – the generation of enquiry designs that are valid and reliable in relation to their function and their context, rather than in relation to the purity of the knowledge or its generalisability – has much to offer schools. Increasingly, networking arrangements between organisations, and the sharing of semi-formalised knowledge and understanding, are becoming important in changing education, and are probably more so than external research findings (OECD, 2000). School-based enquiry is often 'good enough' research, or, as Charles Lindblom (1990) describes it:

> *"The required inquiry process is a broad, diffuse, open-ended, mistake-making social or interactive process, both cognitive and political. 'Inquiry' is not quite the right label, suggesting as it does the rigours of scientific inquiry. 'Probing' captures much of the flavour of the process, since it emphasises persistence and depth of investigation, uncertainty of result, and possible surprise……The study of social knowledge in social change calls for a study of amorphous inquiry, probing, investigation, or search as practised by many kinds of people in various roles. The specialist contributions of those who engage in professional scientific discovery and testing have a place in such processes, but only a limited one."*

Schools are, of course, awash with routine data processing activity. When talking about *enquiry for school improvement* we are implying a process that transcends this routine level – which is more focused, more improvement orientated, more consciously collaborative and more professionally pervasive. A basic taxonomy is offered by the following sequence:

Data - the term we use for the mass of routine or purposefully acquired material that we have available to us within a school.

Information - the meaningful material that we extract from available data because of its potential to inform our future actions and decision-making.

Knowledge - the transformation of data and information into shared, collectively owned and institutionally relevant knowledge as a result of collaborative social processing.

Collaboration in itself is not necessarily a virtuous pursuit – other than for its value in creating social cohesion. Collaboration that involves reflection, dialogue and discourse built around information; which leads to the creation of institutionally relevant knowledge; and which subsequently leads to improvement and planned intervention designs is a potent school development and professional learning activity. Where this process leads also to the 'reification' (Wenger, 1998) or 'valorisation' of that knowledge in commonly understood artefacts, it also provides a route for transfer, adaptation and adoption within learning networks.

Enquiry for school improvement purposes, then, involves purposeful, focused and informed engagement with both pedagogical practice and with the context of the school. It is a means of studying and learning collaboratively about the school's work - and with a view to designing informed improvement interventions, both within classrooms and within the wider operations of the school, arising from the knowledge generated and the contextual meanings made.

Transfer of knowledge between schools involves validation in the host school ("this worked for us"), the creation of process knowledge ("this is how we did it"), and making explicit the theory underpinning practice ("these are the principles underpinning why we did it and what we did"). The generation of

transferable artefacts and the subsequent social processing with teachers from other schools leads to further adaptation, strengthening of the theoretical base and mutual adaptation.

Moving beyond merely analysing and interpreting readily available data requires purposeful enquiry. An interesting starting point can be to create knowledge about existing good practice (and the processes that created it) and to use this 'affirmative enquiry' as a model for transfer and wider learning. Internal benchmarking – bringing all internal practice up to the level of the best – is a powerful way of shifting an individual school's culture towards knowledge transfer and lateral learning approaches. External benchmarking is a useful tool for school-to-school collaboration. Alternatively, a school might use enquiry (within and between schools) to identify gaps between existing practice and aspirations – 'gap analysis enquiry'. Another strategy is to build transferable models of practice – shared knowledge and language between schools - about aspects of teaching. (How do we differentiate for learning styles? What are the characteristics of effective didactic teaching? How do we best get students to learn from one another? What do we know about effective co-operative groupwork? Where is the best classroom use of ICT to support learning and how what it designed? What is rapport, and how is it best achieved? What are the characteristics of effective coaching to improve classroom performance?)

Whatever the approach, knowledge is the medium of educational exchange, and enquiry is the central vehicle for knowledge-creation – at all levels.

Learning Networks and the Role of Enquiry

Within the Networked Learning Communities programme we have defined three levels of Learning Networks:

1. Within school networks
2. School-to-school networks
3. Networks of networks

One firm hypothesis underpinning the Networked Learning Communities work is that the school and system transformation being sought is dependent upon achieving active synergy between all three levels. We feel that the establishment of school-to-school networks is the key component. We are confident of the Project's capacity to facilitate network-to-network learning. We are equally certain, though, that the greatest challenge is the school level redesign required for active within school networks. This echoes the recent DEMOS (2001) finding:

> *Networks should be developed to share good practices. Networks are particularly important, as policy channels have changed. At a more sophisticated level, networks should be developed within institutions.*

1. <u>Within School Networks</u>

A strange characteristic is that, in secondary (and some large primary) schools, teachers are often more disposed to engage in knowledge-creation and sharing activities with colleagues from other schools than with the colleague in the next classroom or the department on the next floor. Partly, it is that we lose sight of our common professional knowledge-base – pedagogy – and have substituted instead subject or phase-specific knowledge. Partly, though, it also relates to poor learning histories and organisational pathologies within our schools.

Enquiry has increasingly been found to be a liberating force for changing this situation in school improvement projects and network programmes around the world. Some of these reasons can be simply stated:

- We cannot improve our schools if we do not know our schools. Collaborative study is a vehicle for knowing.
- The data from enquiry engages people in shared meaning-making and creates an evidence base that energises action.

- Survey-feedback has long been a blame-free strategy in Organisational Development theory, designed to unlock stasis. ("This is what we have found. What do you think it suggests we should do?")
- Collaborative enquiry is a socially cohesive activity. Teachers working together on enquiry activities create a learning context for each other.
- Enquiry is of itself professionally developmental. It creates a context, too, that causes teachers to want to visit the theory and knowledge from external research in order further to inform practice.
- As a vehicle for generating knowledge, enquiry becomes the means by which practice can be transferred and transformed.
- There is an equality of voice in enquiry, a parity – enquiry is emancipatory for members of the school community**.**
- This active engagement of community members within enquiry activity – both as data source and active participant - has the effect both of liberating voice (the lived experience of schools) and of creating actively democratic contexts.

There is also, of course, no end point to enquiry; it is a journey, a way of working, a metabolism, a mode of being, a process of continuous learning. As such, it both requires and creates new structural environments within which to operate. Schools that have been involved with enquiry driven improvement work over a period of time, gradually and progressively re-design themselves around collaborative study of practice.

This works at two levels. Teachers engage in enquiry based around classroom practice, progressively seeking to study and improve what they do, to coach one another in the new practices that evolve. At the same time, enquiry takes place at the school level, ensuring that the school adapts itself so as to be increasingly supportive of this mode of working. Enquiry into changes at the level of school structures and processes become synergistic with enquiry into changes about teaching and learning (the structures and processes of the classroom). One without the other does not work. Classroom enquiries on its own will create isolated pockets of effective classroom practice, but not whole-school change. School level enquiry on its own fails to permeate the insularity of classrooms.

Through schoolwide action research, a school staff can develop the school as a centre of enquiry and knowledge creation so that it is perpetually self-renewing. The formal collection of data, followed by group analysis and interpretation, can move the school community forward on the path it has elected to follow. In America, Glickman (1990, 1993) and Joyce (1993, 1999) are two of the major scholars supporting the use of schoolwide action research for school renewal – involving democratic governance, commonly agreed values, a simultaneous focus on organisational and teaching and learning issues and staff commitment to the 'critical study process' of enquiry. In this country, the work of Hopkins, Ainscow, and West within the IQEA project (Hopkins *et* al,1994; Hopkins and Harris, 1997; Hopkins 2001) has trod a similar path.

Involving groups of staff in collaborative enquiry is, of course, professionally developmental for those who engage in it. However, this is insufficient for whole school improvement and renewal purposes. Two other factors are required. One relates to whole school learning. An enquiry activity designed for school improvement purposes may only involve a small group of staff, but it has to be collectively owned. It is being undertaken by an enquiry group, but on behalf of the whole staff. A second relates to permeability to external learning.

2. School-to-school Networks

One of the beliefs underpinning the Networked Learning Communities work is that schools seeking to redesign themselves as enquiry-based professional learning communities will be able to do so more potently by working and learning together. In fact, we see it as almost axiomatic that schools committed to learning and to collaboration will know that they need to do so. Recycling the existing knowledge-base is an insufficient foundation for learning. Research has also revealed that innovation is a complex rather than a linear process, with interactions among many actors creating *innovation systems*. Developing

companies seldom innovate alone (OECD 2000). Innovation systems are constituted by actors involved in innovation and their interrelationships.

The challenge, of course, is that school-to-school collaboration goes against the pattern of recent times – against the grain, so to speak. There are a number of contributory factors, some contextually specific to education, some generic to organisational learning challenges. They include:

- Poor collaborative histories
- Communication barriers
- Divisions within the system
- Conservative forces and resisters
- Dependency cultures
- Isolationism
- Work overload
- A policy environment that has encouraged competition.

There is also, though, a growing desire for collaboration, an increasingly supportive policy context and an evolving knowledge-base about the infrastructural conditions needed for effective learning networks. These conditions include:

- Informed external facilitation and problem-solving
- Consultancy support and critical friendship
- Connections with the knowledge-base
- Both internal and external trainers
- Research expertise, or support for enquiry
- High levels of communication
- Adequate resources
- Networking capacity – support for school-to-school learning.
- Committed leadership

Contained within this last, leadership dimension there are some key characteristics that may be of even greater significance – the intellectual, emotional and aspirational dimensions of effective knowledge networks. They include: shared values, a willingness to distribute leadership, openness, a capacity for trust, the will to make it happen and the moral purpose to want to work together on behalf of all children and the system. Clearly, leadership is critical.

There are some specific elements of this leadership dimension that are worth making explicit. The first relates to the 'meta-leadership' role of the headteacher in acting as advocate and gatekeeper for the progressive cultural and structural changes required in the way things are done within the school. Within school and between school learning cannot happen without headteacher leadership of a high order – which is why leadership development processes are a key component of Networked Learning Communities. The second concerns the early facilitation and transition management role for leadership teams in getting things started, ensuring that they become embedded, identifying key personnel, creating time and shelter conditions and connecting enquiry groups with the wider community within and beyond the school. A third relates to the particular skills required of those who lead enquiry groups – the creativity, technical abilities, learning hunger, problem-framing and problem-solving capacities, humility, humour, empathy and change agentry orientation.

Beyond these obvious 'levels' of leadership, though, lies also the more potent potential of school-wide collaborative enquiry – which is to empower all staff, at all levels, to become interchangeably leaders and followers, partners and participants in the use of enquiry and the creation of knowledge for school and system renewal.

3. Networks of Networks

NCSL will seek to promote network-to-network learning within the NLC initiative. This is new terrain – we, too, will be enquiring into process and practice, learning as the initiative evolves. The challenge is to

generate system-wide maps of innovatory practice, and to encourage transfer of learning through grouping Networked Learning Communities into 'networks of ten networks'. Each grouping will have consultancy support, a researcher, facilitated online communities and access to web site dissemination, in addition to face-to-face groupings of network leaders, critical friendship partnerships, seminars, celebration and sharing conferences and newsletters. There will also be a substantial quasi-independent 'real-time research' component, designed to transfer learning and to stimulate innovation.

These same 'structures' will hopefully facilitate infusion of knowledge into the network groupings from NCSL's research programmes and knowledge-creating activities as well as from the wider landscape of educational knowledge. Connection with and involvement of international partners and non-educational organisations should generate the challenge from which networks network theory tells us that networks thrive:

> *Network theory tells us that homogeneous networks, characterised by close proximity (e.g. the same district) and common affiliation (e.g. the same educational discipline) limit the extent of different ideas to which the members are exposed and consequently restrict their thoughts and actions to a small repertoire of options. In contrast, networks developed among educators from diverse educational backgrounds, of diverse professional belief systems, and with diverse professional practices or teaching assignments provide a rich source of new ideas and new possibilities and a foundation for experiments in practice. This sort of experimentation holds the potential for profound improvement." (*adapted from Smylie & Hart, 1999).

Knowledge transfer within and between networks will be a crucial determinant of success. However, aspirations around the theme of transformation will be equally dependent upon the paradigm shift potential of challenge by knowledge from beyond this country and, we believe, from beyond the exclusive field of education, too.

Conclusion – Levels of Learning

This paper makes the case that Knowledge Networks require a reorientation, firstly, around enquiry and associated knowledge management processes. Hopefully this dimension has been fully covered. Less fully, but nonetheless overtly, the case has also been made for a focus upon different patterns of leadership within knowledge networks – distributed leadership models, lateral leadership and new styles of coaching and facilitative leadership for headteachers and others in formal leadership positions. It is also axiomatic that leadership and enquiry are processes deeply integrated with learning.

Learning makes professional and organisational meaning from knowledge, and receptiveness to learning – professional, organisational and systemic – is a critical precondition for effective knowledge networks. Within the Networked Learning Communities initiative, we have therefore defined five levels of learning around which proposals will be formulated. They are:

- Pupil learning (a pedagogical focus)
- Teacher learning (with professional learning communities as the goal)
- Leadership learning (at all levels, within and between schools0
- Organisational, or 'within school' learning
- School-to-school learning

Knowledge networks require 'nested' learning arrangements, both laterally and vertically. In that way connected components of the system can learn together in order to be able to function facilitatively for one another. The five levels of learning above lie within control and determinism of those who work in schools. For the system to support knowledge networks it will require also LEAs, universities, and policy-makers at local levels to create hospitable contexts. Just as important will be the national policy context – and the capacity of government departments and agencies such as NCSL, the GTC, TTA, OFSTED etc to work in tandem also – to live out a commitment to knowledge networks at the macro-level.

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