

# How research into ICT in education can support innovation in social practices



*Bridget Somekh*  
*Education and Social*  
*Research Institute*



Manchester  
Metropolitan  
University

- The talk draws on my book *Pedagogy and Learning with ICT: Researching the Art of Innovation*. Routledge 2007.
- The focus is on developing a theory of innovation in social practices drawing from a range of theories; and using this theory to design research so that it supports development in educational policy and practice.

“There is nothing as practical as a good theory”  
(Kurt Lewin)

**But**

how well do we use theory? Do we seek to “own” theory and thereby lose the power of cross-disciplinary analysis?

e.g. Would it be more powerful as a basis for empirical research if philosophers’ understanding of “forms of knowledge” (Paul Hurst) and psychologists’ understanding of “multiple intelligences” (Howard Gardner) were brought together? Why does Gardner never cite Hurst in his writing?

**And**

Are we limited by the assumptions made by previous theorists?

e.g. do we have adequate theories of innovation to understand the process of technology’s impact on social practices described by McLuhan?:

“Transformation of social practices is always unique and unpredictable, involving incorporating a new technology as an ‘extension of the self’” (McLuhan).

# So

Research into ICT in education is, *in our time*, always research into innovation, and therefore needs to be grounded in theoretical knowledge about the process of innovation in social practices (which includes pedagogy).

The big question is, ‘How can we find ways of using research to support the creative, collaborative process of change that combines imagining, experimenting with, and evaluating new social practices with technology?’

Innovation requires vision, sensitivity, playfulness and energy at grass roots level and changes to structures and regulatory frameworks at the organisational and policy levels.

(Somekh 2007)

# Explorations towards transforming formal learning

- Chapters 1 – 3 of my book provide:

A trans-boundary meta-analysis of theories of social practice/activity ... in search of a practical – and therefore powerful – theory of innovation (a framework)

With examples of successful innovation that test / illustrate the power of the theory

A meta-analysis of research literature on ICT in education  
*using the framework as an analytical tool*

Two extended examples of research into ‘prototype’ innovative approaches to learning and teaching (pedagogies)  
*using the framework as a research design tool.*

(Somekh 2007, chapters 1-3)

# Meta-analysis of theories - 1

- Action research (Somekh 2006)
  - Reflection and discussion (learning)
  - Making tacit knowledge explicit
  - Giving participants agency (through knowledge)
  - Changing power relations (eg between teachers/students, teachers/policy-makers)
- Complexity theory (Sumara and Davis 1997)
  - Inter-relationship of things
  - Spontaneous self-organisation
  - Systems change to maintain their coherence
  - Change in complex systems is not predictable
  - The researcher's role is to “nurture” and shape the process
- Chaos theory (Kompf 2005)
  - ICT is an innovation that is happening spontaneously and has its own order
  - Innovatory programmes in education can't buck the bigger processes.

# Meta-analysis of theories - 2

- Wittgenstein – “theorist of sociocultural practices” (Burbules and Smith 2005; Smeyers and Marshall 1995)
  - Human activity is rule-governed
  - We learn the rules by “learning how to go on”
  - To understand social practice we need to find out “*what* rules are at work and how they are being followed” (skate-boarding example)
  - Rules that govern behaviour can only be understood “from the inside” (example classrooms)
  - The meanings of words are always contingent upon the rule-governed tacit knowledge of the social group – “the mind is essentially public, not essentially private” (ie the policy term “what works” is used discursively “as an exercise of power”)
- Socio-cultural theories (Wertsch 1998; Wartofsky 1979)
  - Human actions cannot be separated from their *mediational* means
  - Cognition is “distributed”
  - Changes in practice depend on developing new internal “representations” in the mind, *at the same time as* learning skills in the use of new tools.

# Meta-analysis of theories - 3

- Cultural-historical activity theory (Cole and Engeström 1993; Langemeyer and Nissen 2005)
  - Key to CHAT is to understand the complexity, communicative interdependence and dynamic nature of the activity system
  - Rules, divisions of labour and community beliefs/practices
  - The agent-and-mediational means always directs activity towards an object.
  - Research involves setting up prototype practices or models and researching what happens (“If thinking is basically a social activity mediated by tools, and research is no exception, the implication is that we always gain understanding through intervention.” - L and N)
- Communities of Practice theory (Lave and Wenger 1991; Wenger 1998)
  - The meanings of both “community” and “practice” are precise
  - “Building an identity consists of negotiating the meanings of our experience of membership in social communities. ... Identity is a pivot between the social and the individual ...” (Wenger)

# Case studies that illustrate the socio-cultural theoretical framework in action ...

- Apple Classroom of Tomorrow (Sandholtz and Ringstaff 1996)
- The 5<sup>th</sup> Dimension (Cole 1996)
- The SITES M2 study in a school in Finland (Ilomaki et al 2004)
- The Godøy island school case study in Norway (Krumsvik 2006)
- The ENLACES programme in Chile (Hinostraza et al 2002)
- The Knowledge Producing Schools project (Bigum 2002)

# A theoretical framework for understanding and researching innovation - 1

1. Social practices are culturally constructed through patterns of behaviour and are inter-dependent with the social practices of others. (Ritualised Interaction and Performance)
2. All human activity is oriented towards achieving an object. (Making Meaning).
3. Tools such as ICTs are cultural tools that mediate human activity, yet their affordances remain latent until individuals and groups find how to embed them in new social practices as 'extensions of themselves'. (Designer inputs)
4. Innovation in social practices to make use of the affordances of a new tool depends on the development of a vision of what might be possible.

# A theoretical framework for understanding and researching innovation - 2

5. Human activity is inter-related across all phenomenal levels of social structures and systems, as well as at the level of the social interactions of individuals and groups. (Change at one level requires other levels to change)
6. Change is naturally-occurring and to a large extent unpredictable as systems spontaneously self-organise to maintain equilibrium. (Planned innovations seldom follow predictions)
7. Social science knowledge is contingent on context, culture and researcher subjectivity. Knowledge that is co-constructed by participants, and validated by its use to inform action and change, provides the best possible basis for innovation.

# Using this theory of innovation to design research – The Developing Pedagogies with E-Learning Resources (PELRS) Project

- An intervention study focused on exploring new ways of learning and teaching
- A role for participants as knowledge creators and knowledge brokers
- A role for policy-makers and government agencies as enablers of change in schools
- All participants involved in negotiating the object of their joint activity
- Teachers involved in discussion of the underlying theories of learning and activity
- Ubiquitous and continuous access to ICT resources

(Somekh and Saunders, 2007)

# PELRS

- Developing Pedagogies with E-Learning Resources, 2003-06
- Jointly funded by the General Teaching Council for England and Manchester Metropolitan University
- The researchers worked closely with Lesley Saunders, the Policy Adviser for Research. This enabled the GTC to use PELRS to inform its responses to a number of Government consultation documents about development of educational policy and practice in the use of ICT.

# The PELRS Research Questions

Overarching question – for Years 1 and 2 (carried forward to Year 3)

- Could we organise teaching and learning in radically different ways now we have the internet, internet-look-alike CD/DVD materials, digital imaging, video and other new technologies?

Question for pupil-researchers

- How could we make the experience of ICT at school, more like what we are doing with ICT at home?

Question for Year 3

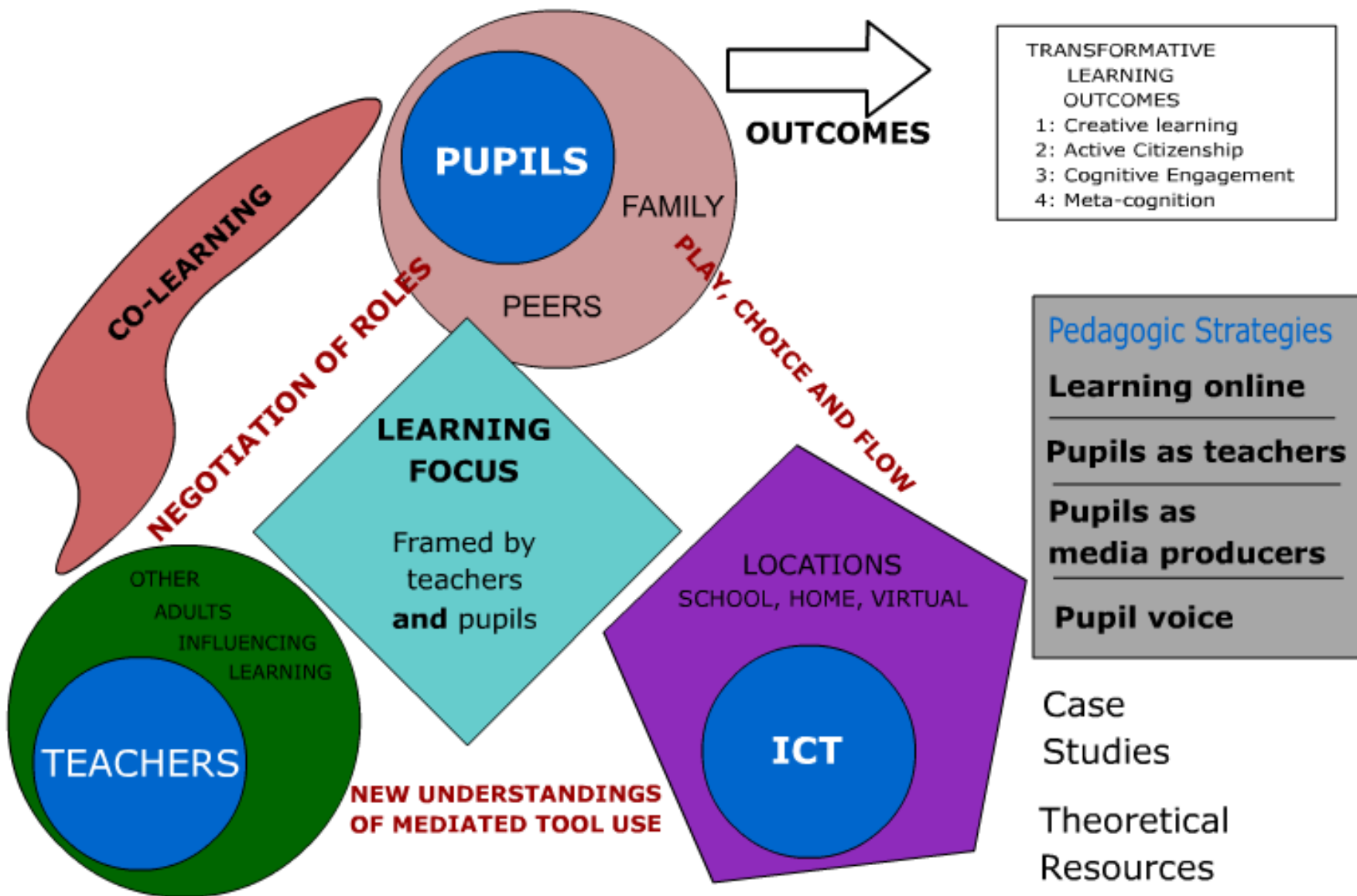
- Can PELRS be ‘scaled up’? Can the PELRS tools and strategies be used to enable transformative learning in many more schools/classrooms?

# The PELRS Pedagogic Framework

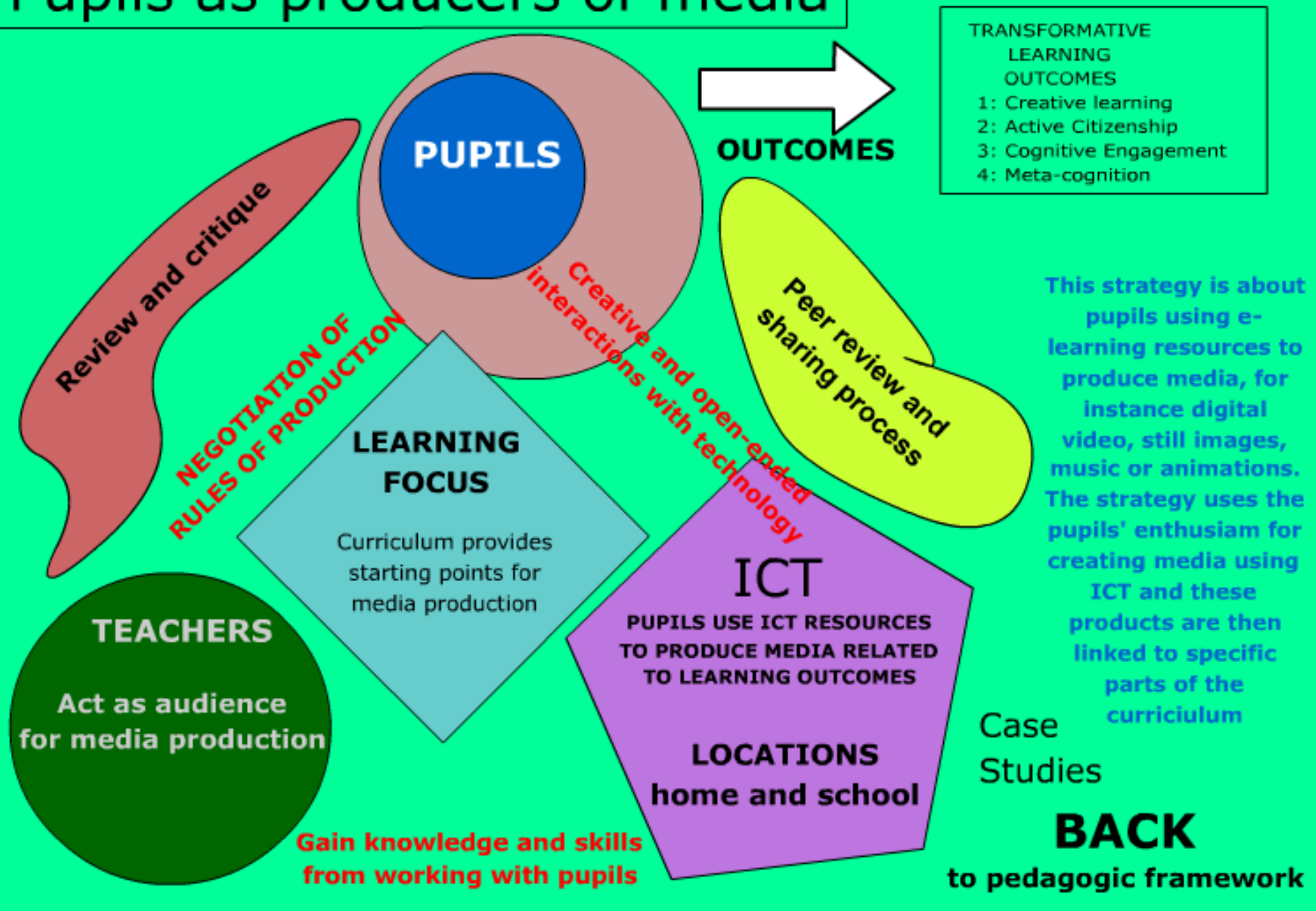
The Pedagogic framework:

- Is based on Vygotskian socio-cultural psychology:
  - both learning and change are mediated by tools/contexts – so can be changed by strategic interventions to change the tools (eg ICTs) and contexts (classroom practices, particularly roles/rules)
- Functions as:
  - a device for planning innovative learning events (as an alternative to linear/ teacher-directed lesson plans)
  - An interface for the PELRS web-site ([www.pelrs.org.uk](http://www.pelrs.org.uk))
  - A semiotic means of discussing theories of pedagogic change with participating teachers.

# Generic Pedagogic Framework



# Pupils as producers of media



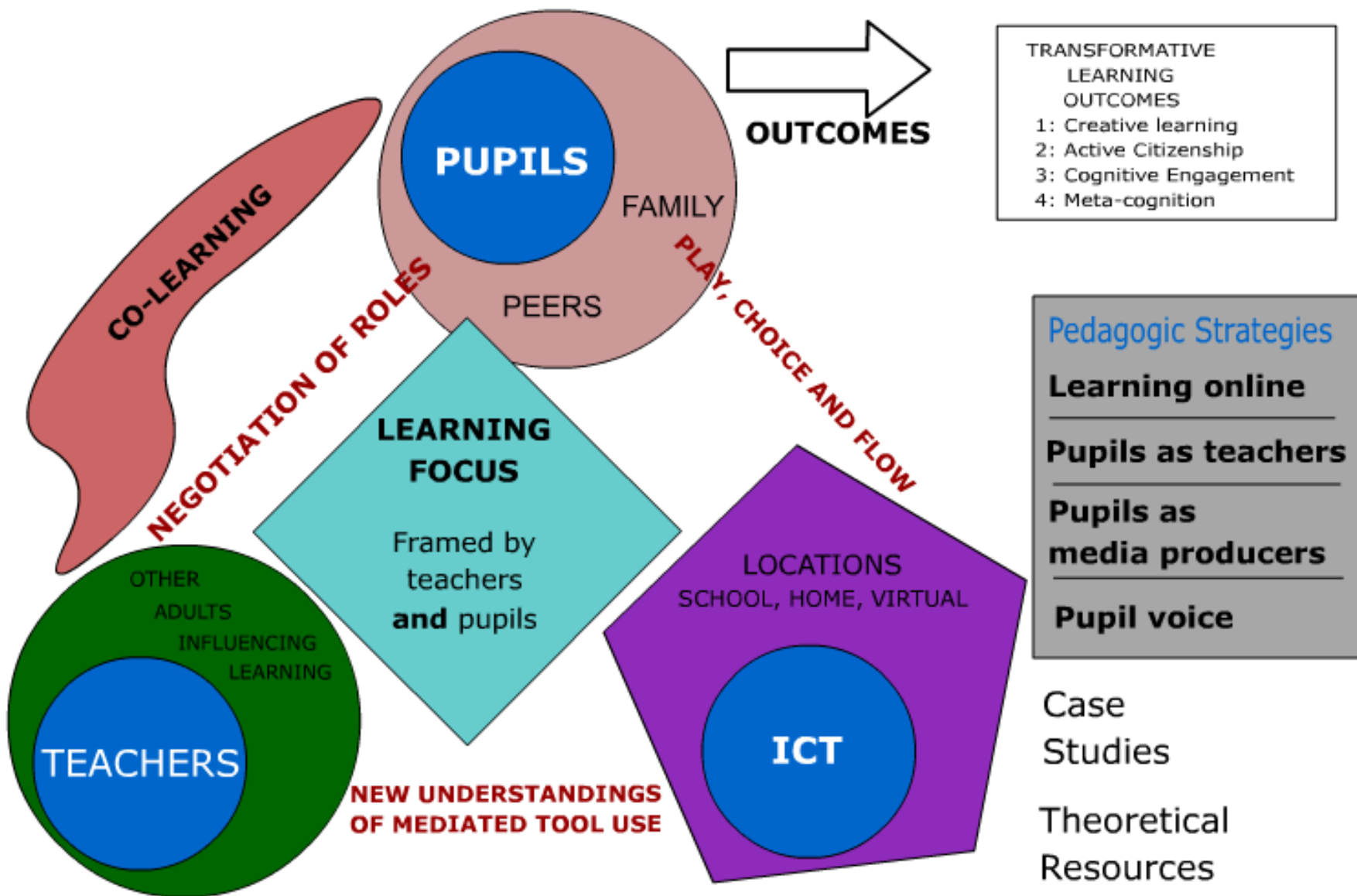
# PELRS findings (1)

- Teachers want to give learners autonomy and are very willing to change – but they are very aware of “SATS” and OFSTED inspections (PELRS schools had Heads willing to take risks)
- PELRS gives teachers access to deep understanding of learning/change (ie learning theory) through the PELRS ‘diagram’
- The Pedagogic Framework is very successful as a tool for planning innovative “learning events”
- Starting with a “plenary” to negotiate how pupils will organise their learning, and what tools they will use has a dramatic impact on pupils’ engagement with learning (eg what is known as “flow”)
- Changing traditional classroom roles has a dramatic impact on pupils’ engagement with learning (eg changes in teachers’ talk)
- Pupils can take much more responsibility for their learning and this results in at least as good “attainment” *plus* “transformative learning”

## PELRS findings (2)

- PELRS strategies / tools are easy for other schools to take up – with similar results – provided that the school leadership supports risk-taking
- Success in using ICT across the curriculum is dependent on recognising the skills pupils may already possess. Sharing their ICT expertise and skills supports pupils in becoming active learners (less dependent on the teacher)
- Pupils knowledge and skills in using ICT *and* learning creatively and independently are not credited by the current assessment system
- Improvements in schools' ICT infrastructure plus new tools such as cam-corders and IWBs make fundamental change to learning possible
  - *BUT* access to the internet needs to be as open as possible (technological “blocks” to the internet are a big “turn off” for both teachers and pupils)
  - *BUT* the logistics of using ICT in secondary schools – with current time-tabling regimes – and without constant access to ICT – make it impossible for secondary teachers to create contexts for transformative learning.

# Generic Pedagogic Framework



# References

- Burbules, N. C. and Smith, R. (2005). "What it makes sense to say': Wittgenstein, rule-following and the nature of education." *Educational Philosophy and Theory* **37**(3): 425-430.
- Cole, M. and Engestrom, Y. (1993). A cultural-historical approach to distributed cognition. *Distributed Cognition: psychological and educational considerations*. G. Salomon. Cambridge and New York, Cambridge University Press.
- Kompf, M. (2005). "Information and Communications Technology (ICT) and the Seduction of Knowledge, Teaching, and Learning: what lies ahead for education." *Curriculum Inquiry* **35**(2): 213-233.
- Langemeyer, I. and Nissen, M. (2005). Activity Theory. *Research Methods in the Social Sciences*. B. Somekh and Lewin, C. London and Thousand Islands CA, Sage: 188-196.
- Lave, J. and Wenger, E. (1991). *Situated Learning: Legitimate peripheral participation*. Cambridge, New York and Melbourne, Cambridge University Press.

# More references

- Somekh, B. (2006). *Action Research: a methodology for change and development*. Maidenhead UK and New York US, Open University Press.
- Somekh, B. (2007). *Pedagogy and Learning with ICT: Researching the Art of Innovation*. London and New York, Routledge.
- Somekh, B., & Saunders, L. (2007). Developing knowledge through intervention: Meaning and definition of ‘quality’ in research into change. *Research Papers in Education*, 22(2), 183-198.
- Sumara, D. J. and Davis, B. (1997). "Enactivist Theory and Community Learning: toward a complexified understanding of action research." *Educational Action Research* 5(3): 403-422.
- Wartofsky, M. (1979). *Models: Representation and Scientific Understanding*. Dordrecht, Reidel.
- Wenger, E. (1998). *Communities of Practice: learning, meaning and identity*. Cambridge UK, New York and Melbourne, Cambridge University Press.
- Wertsch, J. V. (1998). *Mind as Action*. New York and Oxford, Oxford University Press.