



# Education Systems Research in Developing Countries: the Role for Research Funders

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**Report of a joint UKCDS, DFID and ESRC  
workshop**

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*“At least 250 million children cannot read or count, even if they have spent four years in school.”*

## Background

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This joint UKCDS-DFID-ESRC workshop aimed to help DFID and ESRC scope a potential call for research to understand education systems in developing countries. It had three objectives:

- To explore how education systems research, both in the UK and for international development, has been conceptualised to date;
- To learn from the history, structure and methods of health systems research as a field to inform future thinking on education systems research models, frameworks and methodologies;
- To inform the design of future education systems research for international development.

In this context, education systems research is a field of study that examines the organisation, financing, and delivery of education services and the impact of these services on learning, skills development and well-being. The desired impact of research in this area is to inform the development and delivery of interventions aimed to improve education at scale. This area is important to explore further because:

- Whilst many more children are in school across the developing world<sup>1</sup> the evidence is clear that many of those in school are learning very little. At least 250 million children cannot read or count, even if they have spent four years in school.<sup>2</sup>
- Education policy is shifting its attention from a predominant focus on access, to also address improving the performance of the system as a whole to raise learning outcomes.

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<sup>1</sup> Out of school children are down from 105 million in 1999 to 61 million in 2012 thanks to more effective education policies and sustained national and international investment

<sup>2</sup> UNESCO Education For All, Global Monitoring Report 2012, Paris

*“DFID education investment worth £1.9bn works closely with partner governments”*

- We know inputs make a difference in improving access, especially when initial levels of school participation are very low, but we also know that *how* different systems use these inputs translates into enormously varied outcomes. We also know remarkably little about the impacts of education policies and systems on student outcomes.

DFID invests heavily in education, with a strong focus on improving learning, as well as access and equity. DFID has committed to supporting 9 million children in primary school, 2 million in secondary school and training 190,000 teachers with £2.7bn allocated to education programmes in partner countries between 2010/11 and 2014/15.<sup>3</sup> A majority of these programmes, representing £1.9bn, work closely with partner governments to improve the quality of education.<sup>4</sup> The evidence base that underpins education systems reform and interventions at scale is surprisingly thin. A recent review identified only a small number of high quality studies in the field of education systems research.<sup>5</sup>

Research in education economics, particularly on education production functions, suggests that more resources alone do not drive better learning: “simply pouring more resources into a system is not enough: far more important are the processes which use these resources”.<sup>6</sup> More business as usual support for increased inputs is unlikely to yield significant improvements in learning.<sup>7</sup> There is also a growing body of evidence looking at interventions to shift incentives and motivation of teachers and administrators, suggesting these may have promising impacts on learning. But many of these studies are very small in scale and their applicability to whole education systems is questionable. For example, a recent replication of an RCT of contract teachers in NGO schools in Kenya found identical positive effects in the NGO schools and zero effect in the government schools, as the roll out of the intervention was

<sup>3</sup> DFID Education Position Paper 2013

<sup>4</sup> Many of the other education programmes also include system reform elements, but are not classified as sector budget or general budget support. If we include these programmes, the total rises to £2.25bn

<sup>5</sup> HEART *Rapid Review of Education Systems Research* 2013

<sup>6</sup> Economist Intelligent Unit *The Learning Curve* 2012 p.7

<sup>7</sup> Not one single ‘traditional’ input based intervention (textbooks, teacher training etc.) was found to delivery either statistically significant impacts on student learning or value for money in a recent review Kremer, Michael Brannen, Conner and Glennerster, Rachel “The Challenge of Education and Learning in the Developing Wold” in *Science vol 340*

interrupted due to a teachers' strike which resulted in the formalisation of the contract teachers.<sup>8</sup> This illustrates the importance of a deep understanding of the education system and context to be able to understand how some of these promising interventions could play out at scale and within the political economy of systems.

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<sup>8</sup> Bold, Tessa Kimenyi, Mwangi Mwabu, Germano Ng'ang'a, Alice and Sandefur, Justin "Scaling Up What Works: Experimental Evidence on External Validity in Kenyan Education" *Centre for Global Development Working Paper 321*

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## Workshop design

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The workshop brought together the UK-based education researchers focused on developing countries with education researchers looking at the UK education system, and health services and systems researchers focusing on developing countries. The meeting included 20 experts, facilitated by Jeff Waage, Director of the London International Development Centre (LIDC) and member of DFID's Research Advisory Group. The workshop began with overviews of the state of play in the three fields – and then moved into in depth discussion. The agenda and participants list are attached as an appendix.

*“To estimate the effectiveness of interventions, it is necessary to investigate the complex interplay among ‘bundles of inputs’, system characteristics, and the broader political economy.”*

## Key themes emerging from discussion

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Three key issues were touched upon in numerous presentations, as well as focused discussion sessions: the development of conceptual models, challenges around data and methodologies to study education systems in developing countries, and opportunities for learning between research communities.

### Conceptual models for systems research

Prior to the workshop, DFID had commissioned a rapid review of relevant literature to identify conceptual models of education systems.<sup>9</sup> The review identified a wide range of frameworks for education systems in low and middle income countries, but none that have been widely adopted as a basis for research. More often, frameworks are proposed in policy discussion papers as tools for implementation. The discussion sought to build on this background to appreciate the challenges and complexity of further developing robust conceptual frameworks for education systems research.

Caine Rolleston’s presentation, using Young Lives data, provided empirical evidence that systems matter to the effectiveness of interventions. It noted that the effects of most school and teacher characteristics are not statistically significant when examined across different contexts. Yet there are large differences between and within systems on pupil achievement and school effectiveness. In the four countries studied as part of the Young Lives longitudinal survey, the largest differences have been observed *between* education systems rather than within systems. This supports the notion that to estimate the effectiveness of interventions it is necessary to investigate the complex interplay among ‘bundles of inputs’, system characteristics, and the broader political economy. It was noted that theories of change for different education systems have not been elaborated and comparative work on this is scarce.

Kara Hanson provided an overview of the development of health systems research as a field of study. It was noted that whilst health systems research has been evolving

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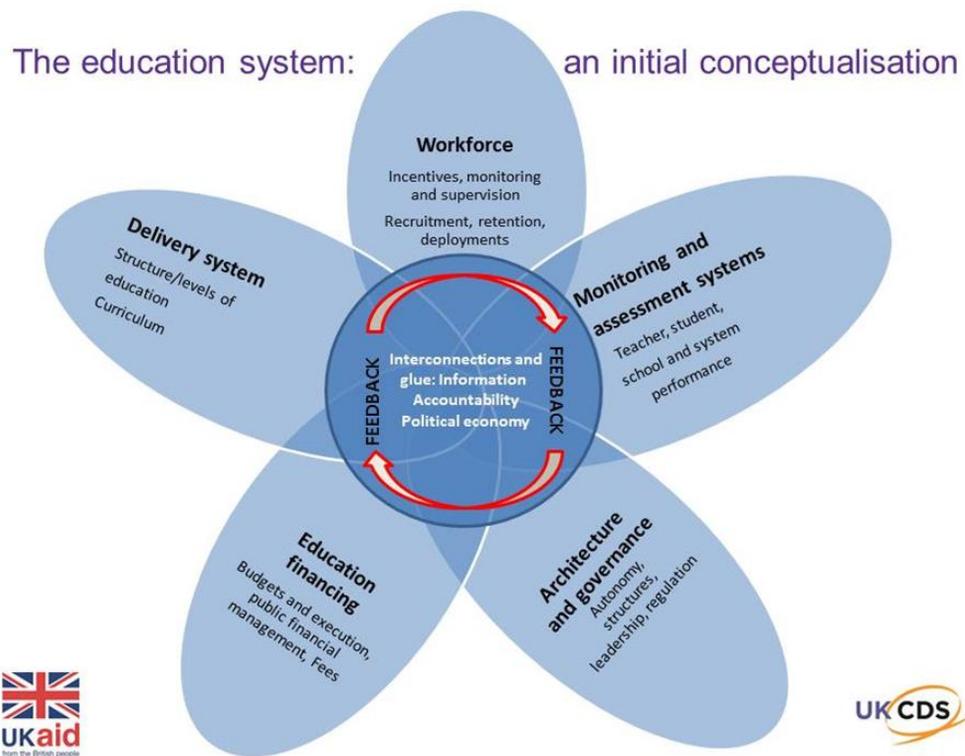
<sup>9</sup> HEART *Rapid Review of Education Systems Research* 2013

since the 1970s, there are still numerous different conceptual frameworks. This is not a drawback, as different models are appropriate for addressing different research questions.

Health systems research can be characterised as an interdisciplinary topic that blends economics, sociology, anthropology, political science and other disciplines. It is driven by exploratory, explanatory and evaluative questions at multiple levels, from the individual agent to the architecture and oversight of whole systems. Health systems thinking has enabled the implementation of systemic, rather than disease specific, responses and interventions.

An explicit systems approach, which recognises complexity and interaction and characterises the system as self-organising, governed by feedback, and non-linear, represents a more recent development in the field. It has emerged as a result of practical realisation that previous approaches had not adequately explained why interventions and reforms had not had their desired effect.

The group discussed a conceptual model put forward by DFID at the workshop:



Overall workshop participants felt that it was not a priority to develop a new conceptual model of education systems. The model presented above complemented quite well existing models of health systems. It also lacked some key dimensions including:

- The political economy of a system
- The dynamic feedback mechanisms that either maintain systems or promote change
- The outcome of the system should be focused on learning and equity

The workshop discussed that it would be useful to have multiple systems models and not restrict the research agenda to a single model. Similar to health research, multiple conceptual models can help to inform research and analysis in different contexts and to answer different questions.

One question, particularly relevant to fragile states, was how to conceptualise the minimum dimensions of an education system. Core aspects of a system found in developed countries might be extremely poorly developed or even non-existent, and conceptual models must account for this to be useful in such contexts.

Finally, a key question was whether education systems research should to maintain a focus on the system as a whole or whether breaking into subsystems would make research more meaningful? Significant work in health systems has taken the latter route, and there has been some work to date on sub-system elements in education, notably education financing. It is arguable that education systems are different to health systems and are more amenable to a whole system approach, although no consensus was reached on this.

Summary:

- Based upon the available evidence, it seems clear that educational outcomes can only be explained in part by individual school or teacher characteristics, or levels of resources.
- There is a clear need to examine the complex interactions between variables and the characteristics of larger scale education systems.
- In taking such a programme of research forward, several observations from the development of health systems may be helpful:
  - The emergence of health systems research was driven by practical questions at multiple levels
  - It is strongly interdisciplinary

*“In the UK, rich and reliable administrative data sets have been utilised by researchers to undertake ex post evaluation of reforms.*

*This will not be an option for researchers focused on education systems in developing countries.”*

- There are a multitude of different specific conceptual models, each of which takes a holistic approach to a system (or subsystem), but is appropriate for particular research questions.

## **Methodology and data issues in studying systems**

### **Data availability**

Sandra McNally’s presentation addressing research on UK education systems highlighted how rich and reliable administrative data sets have been utilised by researchers to undertake *ex post* evaluations of reforms. These include the National Pupil Database and major longitudinal data sets can be linked to administrative data (e.g. Millennium Cohort Study). Historically, the analysis of large datasets has been a predominant approach to assessing policy impact.

The limited availability, coverage and quality of administrative data in developing countries highlighted in the group discussions means that, in many cases, this will not be an option for researchers focused on education systems in developing countries. Assessment data in particular is very weak. The quality and availability of administrative data is however much higher in Middle Income Countries (MICs), which may be of interest if the proposed research call would include lesson learning from reforms in MICs.

Administrative data sources in developing countries include Education Management Information Systems, which provides data on key school inputs and characteristics, though concerns were raised about the reliability and coverage of the data. Household surveys e.g. Demographic and Health Surveys, contain important demographic descriptors (ethnicity, poverty status, parental education, language) and data to estimate education demand, though are not linked to schools. In light of the clear data issues, incorporating data collection through national systems in any future research was highlighted within the group discussions.

Longitudinal data sets with integrated school surveys, such as Young Lives (Caine Rolleston) offer an opportunity to assess school effectiveness and to study the dynamics that affect access and achievement over time. They present the opportunity to assess the impact of bundles of inputs and to begin to tease out contributions of different elements in the system. The detailed household and pupil characteristics collected in such data sets also allow researchers to investigate how individual,

*“New methodologies are not required, but a novel mix of methodologies from different disciplines may be needed to address particular questions”*

household and community variables impact on educational achievement. Longitudinal data can therefore be used to understand the performance of an education system over time, though additional research is required to uncover causal relationships. The high cost, over many years, of compiling longitudinal data sets is often prohibitive and mean that they are only available in select countries/provinces.

Much of the discussion focused on undertaking international comparisons across systems, which requires comparable indicators. For context specific indicators e.g. learning outcomes, this requires developing specially adapted metrics, which Caine Rolleston explained was a complex and time consuming process.

### **Methodological issues**

Kara Hanson’s presentation highlighted recent methodological advances in “systems thinking” among health researchers, recognising the complexity of interventions. These include advances in (non-experimental) impact evaluation: theory-based evaluation and evaluation of complex interventions. Complex evaluations include the need for process evaluations to investigate incomplete interventions and lower “fidelity of protocol” in government systems, alongside multiple outcome measures to test for unintended consequences. It is a field showing unprecedented growth in health, but still faces challenges. There are likely to be lessons for education systems research. Kara also discussed comparative research: trying to understand the effect of context on the issue under study and therefore methods for structuring the understanding of the setting. This could include pattern recognition to identify settings in which interventions are likely to succeed. It opens up the possibility of developing typologies of systems, though in health systems this research approach failed as it was difficult to support with data. Typologies have also been explored for sub-systems (e.g. financing).

There was a consensus that new methodologies are not required, but a novel mix of methodologies from different disciplines may be needed to address particular questions. Thus the challenge will be how to encourage interdisciplinary working to ensure rigorous mixed method approaches are used effectively to develop a portfolio of research that adds up to more than the sum of its parts. Demonstrating rigour in addressing exploratory questions is not as simple as demonstrating rigour in evaluative questions.

*“There was some consensus that there is a learning opportunity for education systems researchers in terms of the mindset that health systems researchers adopt.”*

James Newell highlighted the importance of working closely with policymakers and collaborating with local partners with strong capacity, both for access to research resources and to achieve impact. Systems research requires developing long term relationships with Ministries in developing countries and ensuring that outputs are relevant for the Ministry (i.e. choose issues that are relevant with big potential impact).

Summary:

- Data quality and availability is a core aspect of education systems research in the UK, the absence of this in many developing country contexts presents a major barrier to research.
- Addressing questions related to education systems is likely to require novel mixed methods approaches, and funders will be challenged to promote this development and appropriately balance innovation and rigour.

## Collaboration and learning

Of the areas of discussion profiled in this workshop report, there was least consensus around the scale, nature, and direction of learning opportunities between the research communities present. What follows therefore represents a selection of the views expressed, with an indication of the level of agreement, rather than anything more definite.

There was broad consensus around two areas:

- That health systems research is bigger and more established as a field than education systems research focusing on international development. Kara Hanson’s presentation on health systems highlighted the role of funders in nurturing the field through specific systems-focused funding calls, and the role of conferences for supporting the legitimacy of health systems research as a field in its own right. A number of attendees spoke of the value of health-relevant data and the role of funders in supporting its collection. There is clear learning here for funders interested in education systems.
- That the three fields (UK education, international education and health systems) use similar and equally sophisticated research methodologies. Importantly, the three communities are topic-defined rather than discipline-defined communities. Health systems research evolved as a field from a clinical sciences core who recognised in the 1960s and 1970s that effective disease control was limited by a lack of understanding of the systemic context

of healthcare. Education systems evolved differently, but both today have a strong representation of economic, anthropological, sociological and political science methodologies.

There was some consensus that there is a learning opportunity for education systems researchers in terms of the mindset that health systems researchers adopt, and that this learning could be fostered through collaboration. Moses Oketch, for example, who is working at the boundary of health and education systems research communities, argued that the health systems research community takes a more holistic approach. It was noted that external factors may have stimulated this. Health MDGs, for example, were specified as outcomes which may have stimulated systems-thinking, whereas the education MDG is reductionist and output based. The workshop organisers and facilitator also broadly agreed that the health-focused community take more of a systems-approach than education researchers focused on international development do at present.

### **Two way learning around shared challenges**

There was agreement amongst attendees that there are a number of opportunities for two-way learning between fields.

- Not separating out systems and services research. James Newell outlined how combining services and systems research was difficult but necessary. “Systems exist only to support services, so systems design and research needs to be aware of at least some of the detail of whatever it is that needs to be delivered. For example, if we plan to explore changing HR or financing methods, we need to consider why we are doing this: is it to deliver the same services, or different services – and if different services, what are they? Conversely, service delivery is dependent on the underlying systems, so research and design of delivery of new services require an understanding of the constraints of the supportive systems. For example, if we plan to explore increasing staffing levels or training processes, are the resources available?”

*“There is a need to move beyond descriptive studies to research that evaluates complex real-world interventions”*

- Providing the type of research necessary to act as the evidence base to underpin effective interventions. The rapid review<sup>10</sup> and consensus at the workshop highlighted there is a need to move beyond descriptive studies to research that evaluates complex real-world interventions.
  - In this respect some participants thought that health systems researchers’ use of process and realist evaluation techniques might be ahead of current practice in education systems research.
- Generalizability: whether the findings from one context can be transferred and applied in others. It can be expected that this will be an equal, if not greater challenge for education systems, as health outcomes are arguably more straightforward to translate across contexts.
- Health systems research has faced challenges in demonstrating rigour. Against a background of clinical research, the interdisciplinary and exploratory nature of much health systems research has met some resistance. While the context for education research is different, some attendees argued that recent trends to emphasise methodologies like RCTs due to their apparent scientific rigour may pose an obstacle to education systems research.
- Both education systems and health systems researchers highlighted the need to improve the quality of the qualitative research in their field.
- Both education systems and health systems researchers struggle with having the networks and access to policymakers to find out what questions they want answering.
- Both fields also struggle with finding good in-country partners to collaborate with that aren’t already very busy.

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<sup>10</sup> HEART *Rapid Review of Education Systems Research* 2013

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## Scoping the call

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At the workshop, participants provided some thoughts on how DFID and ESRC might shape a potential joint call. These included:

- To focus on issues that cut across health, education and other sectors: nutrition, early childhood development, deworming, the impact of education on health outcomes, and more.
- To focus on common systems issues shared between health and education systems and other areas taking a systems approach (e.g. management sciences). These could include workforce development (training, absenteeism) and financing.
- To provide catalyst funding to stimulate health and education systems research collaborations as well as collaborations across other fields, in advance of a bigger call for research proposals.

## Conclusion and next steps

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This workshop aimed to help DFID and ESRC scope a potential joint call around education systems research for international development. It brought together three UK research communities: those investigating education systems in international development, those looking at health systems in international development, and those focused on the UK education system.

Speakers outlined the state of play in each field, and then in-depth discussion focused in three areas: conceptual models for systems research, methods and data issues in studying systems, and the potential for collaboration and learning across research communities.

The workshop revealed a small but methodologically sophisticated UK research community focusing on education systems in international development, using a variety of conceptual models to guide their research. Key challenges facing these researchers included a lack of data, particularly longitudinal data, and the difficulty of moving beyond awareness that 'context is paramount' to deliver rigorous comparative and evaluative research. Opinions amongst the attendees were mixed as to whether (and how) education systems researchers could learn from the bigger, and more developed field of health systems research.

The ability to draw on attendees' diverse expertise and experience was extremely useful for the funders, and DFID and ESRC will continue to engage with the UK research base as the call develops.

This next steps following from this workshop are:

1. This workshop report, and that of another held in Washington DC, will be used as the basis for further consultation on the theme of education systems research in August and September 2013.
2. DFID, the ESRC and UKCDS will use the findings from this consultation process to directly inform the development of a new research programme in education.

## Contact UKCDS

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For more information please contact:

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## Appendix – workshop agenda and participants

### Scoping workshop on “Education Systems Research in Developing Countries: the Role for Research Funders”

#### Overarching question

What research challenges are shared between those studying education systems in development, the UK education system and health systems? What can these groups learn from each other?

#### Agenda

Start	Finish	
10.00	10.30	<b>Welcome and Introductions</b>  Welcome – Jeff Waage, LIDC and DFID iRAG Member  Stefan Dercon, DFID: DFID’s interest in education systems research  Max Gasteen, DFID and Julie McLaren, ESRC: Objectives for the event  Jeff Waage, LIDC: Format for the day
10.30	10.40	Coffee break
10.40	12.00	<b>Session 1: Current state of play</b> <ul style="list-style-type: none"><li>• Caine Rolleston, University of Oxford: Education systems research in developing countries – lessons from Young Lives</li><li>• Sandra McNally, University of Surrey and the Centre for Economic Performance, LSE: Methods and approaches to investigate the UK education system</li><li>• Kara Hanson, LSHTM: The history and evolution of the field of health systems research.</li></ul> Three 15 minute presentations each followed by the opportunity for discussion.
12.00	12.30	Lunch
12.30	2.00	<b>Session 2: Barriers to better education systems research in development</b>  Break out discussions focusing on:  Conceptual models

		<ul style="list-style-type: none"> <li>• What are the strengths and weaknesses of existing conceptual models in education systems research for development? What common strands are there? Do we need to develop a development specific conceptual model?</li> </ul> <p>Methodologies</p> <ul style="list-style-type: none"> <li>• What data do we need to inform a systems approach and is it currently available? What research methods do we need a) to analyse and diagnose a system b) to understand the impact of system wide change on both the outcomes of interest (access, learning, non-cognitive) but also on other components of the system and how this effects the overall functioning of the system?</li> </ul> <p>Break out discussions, with short summaries presented back to the group as a whole.</p>
2.00	3.00	<p><b>Session 3: Cross learning from the three communities – how can the sharing of knowledge help overcome the barriers outlined above?</b></p> <p>Presentation to start discussion:</p> <ul style="list-style-type: none"> <li>• James Newell, University of Leeds: Shared challenges – systems research in developing countries.</li> </ul> <p>Response:</p> <ul style="list-style-type: none"> <li>• Moses Oketch, IOE: What I think education systems research could learn/adapt/adopt from health systems research</li> </ul> <p>Followed by discussion of the mechanisms that would make this feasible, and the role for research funders.</p>
3.00	3.15	Coffee break
3.15	4.00	<p><b>Closing wrap up and next steps</b></p> <p>Whole group discussion</p> <p>To discuss the feasibility of research into education systems: will research funding deliver rigorous evidence, both as a global public good, and to inform UK policy and programme investments?</p> <p>Who else should DFID and ESRC consult? What’s the best way to make sure a research programme meets the needs of developing country policy makers and practitioners?</p>



## **Participants**

Paul Atherton, DFID  
Masooda Bano, University of Oxford  
Robbie Coleman, Education Endowment Foundation  
Peter Colenso, Children's Investment Fund Foundation  
Stefan Dercon, DFID  
Imogen Featherstone, Leeds University  
Caroline Fiennes, Giving Evidence  
Kara Hanson, LSHTM  
Frank Hardman, University of York  
Victor Lavy, University of Warwick  
Sandra McNally, LSE  
Louise Morley, University of Sussex  
Ruth Naylor, CfBT Education Trust  
James Newell, Leeds University  
Moses Oketch, Institute of Education  
Natasha Palmer, LSHTM  
Caine Rolleston, University of Oxford  
Luke Sibieta, Institute for Fiscal Studies  
Leon Tikly, University of Bristol

## **Facilitator**

Jeff Waage, LIDC

## **Observers**

Craig Bardsley, ESRC  
Rachel Hinton, DFID  
Max Gasteen, DFID  
Julie McLaren, ESRC  
Eva Oberg, DFID  
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