HEART
HEALTH & EDUCATION ADVICE & RESOURCE TEAM

Rapid Review of Education Systems Research in Low and Middle Income Countries

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Content

1. Introduction

This rapid review aims to examine:

- The conceptual frameworks underpinning education systems research in low and middle income countries (LMICS) and to what extent these are clearly articulated and widely accepted.
- The extent and nature of education systems research in LMICs, its key findings and quality.

The literature included in this rapid review examines whole education systems, rather than studies of particular subsystems or components of an education system. The authors are aware that there is extensive literature on particular aspects of education systems but reviewing this literature was outside of the scope of this review. As the focus of this review is on examining the conceptual frameworks underpinning education systems research, it could be seen as inappropriate to review literature on pre-determined components of education systems. Examining the components which make up the conceptual frameworks should come first.

The review methodology is outlined in section 2. The results of the review follow in section 3, presented in four sections:

a) Conceptual frameworks proposed by International Organisations and Programmes
b) Discussion papers, Literature Reviews and Strategy Documents proposing a conceptual framework for education systems
c) Individual country case studies of education systems
d) Comparative case studies or comparative education systems research across countries

Finally, in section 4, the results and quality of the body of evidence are discussed and conclusions are drawn. These include:

- A wide range of conceptual frameworks were identified regarding education systems in low and middle income countries but these were not accepted widely or used extensively as a basis for research.

- Many of the conceptual frameworks were proposed in policy discussion papers or developed as implementation tools rather than being primarily intended as research frameworks.
- Overall, a small number of high quality studies were identified in the field of education systems research but the majority of studies identified through this rapid review were of moderate or low quality.
- It could be argued that there is a need for more agreement regarding the conceptual frameworks which should underpin education systems research to enable more direct comparison between research studies and the development of a strong evidence base.

2. Review Methodology

Education database search strategy
The following major education and international development databases were searched: Education Resources Information Center (ERIC); British Education Index (BEI); Australian Education Index (AEI); ELDIS.

In ERIC, BEI and AEI, subject heading and keyword searches were combined.
The subject headings used were: education systems; systems approach; systems analysis; developing countries, developing nations; comparative education.

The keywords used were variants of: education systems; developing countries; developing nations; low and middle income countries; low income countries; middle income countries; framework.

Tools for adjacency searching; title searching; abstract searching and limiting results by document type were applied in order to limit the search appropriately.

To view the detailed search strategy for ERIC, BEI and AEI, see appendix 1.
These searches produced a total of 404 results.

The search function in ELDIS only allows basic keyword searching so a search was conducted using the keyword “education systems”. This produced 432 results.

The results of these searches were screened by reading titles and abstracts. The full texts of papers which were potentially relevant to the review’s aims and objectives were retrieved when available. Further papers were excluded from the review on the basis of reading the full texts. The number of papers included in the review from these database searches is 18.

Other search strategies
Experts in education research were consulted for their recommendations regarding relevant literature and sources of information.

The websites of potentially relevant organisations were searched: World Bank, UNESCO, INEE.
Selected references were identified from the papers included through database searching and expert recommendations.

Data Extraction
Data was extracted from the papers selected for inclusion in the review, using data extraction questions (see appendix 2).

Quality Appraisal

DFID's How to Note: Assessing the Strength of Evidence (2013) was used as a guide to assessing the quality of the individual studies included in the review and to evaluate the overall strength of the literature surveyed.

Limitations of the Review Methodology
This is a five day rapid review of the literature. Due to time constraints, a comprehensive search of all literature on education systems was not possible. The database search strategy was restricted by the use of limited keywords and by using strategies such as title searching and limiting searches to journal papers and reports, in order that the search results were appropriate for this rapid review.

The focus of the search was on papers examining whole education systems, rather than studies of particular subsystems or components of an education system. Although the authors are aware that there is an extensive literature on particular aspects of education systems, due to time constraints, reviewing this literature was outside of the scope of this review.

The DFID How to Note was used as a guide to assessing the quality of the individual studies included in the review. However, due to time constraints, a detailed assessment of individual study quality was not possible.

3. Results

a. Conceptual frameworks of education systems defined by International Organisations and Programmes

This section presents an overview of conceptual frameworks of education systems developed by major international organisations and programmes. The primary purpose of these conceptual frameworks is not always to underpin research. They have sometimes been developed as part of an implementation guide or programme to improve education systems. But research outputs and case studies have been developed, or are intended to be developed in the future, according to the frameworks. Some of these conceptual frameworks intend to provide an overarching vision of the whole education system. Others are intended for a more specific purpose, for example, a focus on education systems in emergency situations or on education quality, but their perspective includes the wider education system.

World Bank Systems Approach for Better Education Results (SABER)
The World Bank set out its commitment to a whole systems approach to improving education in its Education Strategy 2020: Learning for All (World Bank 2011). This document discusses strengthening education systems as a key priority for World Bank strategy. It recognises that strengthening an education system so that it efficiently delivers better learning outcomes requires a number of interrelated actions, particularly around accountability and monitoring. The message is: without well-defined responsibilities and performance goals, there is no way to generate the information needed to manage and assess a service delivery system, requiring: 1) policies and regulations on quality assurance, learning standards, compensatory programs, and budgetary processes that are transparently implemented and enforced 2) adequate financing; and 3) compliance with these policies and regulations. The new strategy explicitly recognises that learning opportunities go beyond those offered by the public sector, as well as beyond traditional formal programs. The document also emphasises that a system approach must include a strategy for addressing equity problems across population groups. It concludes that to strengthen an education system means to align its governance, management, financing, and performance incentive mechanisms to produce learning for all.

The World Bank's Systems Approach for Better Education Results (SABER) is a major programme of education systems research (World Bank, no date). SABER's conceptual

framework is clearly articulated on its website. SABER aims to enable both developed and developing countries to systematically examine and strengthen the performance of their education systems. They aim to do this by developing diagnostic tools to benchmark countries' education policies in a range of policy domains. This can be used as a basis for countries to measurably improve performance in a given policy domain. The domains are: Student assessment; Early Childhood Development; Engaging the Private Sector; Equity and inclusion; School finance; Education Technology/ICT; Information Systems/EMIS; School autonomy and accountability; School health and nutrition; Teachers; Tertiary education; Workforce development; Learning standards. The rationale for the choice of these domains, and whether they are intended to represent all of the subsystems of the whole education system, is not clearly identified on the website. Within each of these domains a similar process will be followed:

1. Development of an evidence-based conceptual framework which identifies the key policy goals for that domain, the levers for achievement of these goals and the indicators to measure the achievement of the goal.
2. Development and use of diagnostic tools, based on the evidence identified in the conceptual framework, to collect information and data relevant to assessing the country's performance in the policy domain. The country performs a self diagnosis using the tools which can include questionnaires and interviews completed by key informants and data extraction from policy documents.
3. A country profile report is produced by the World Bank which provides a description of a country's performance on the given policy domain. This includes a standardised assessment of the development level of the country's policies and systems in that policy domain. The development levels are categorised as: Latent/ Emerging/Established or Mature.
4. Country case studies will be produced to identify what countries have done to measurably improve performance in a policy domain.

SABER is currently under development and progress is varied in the different policy domains. For example, in the student assessment domain, diagnostic assessment tools have been piloted in Chile, New Zealand and Uganda. Country case studies have been commissioned from Australia, Brazil, Chile, Korea, New Zealand, Russia and Uganda but are not yet available on the website. In the early Childhood Development domain, approximately 30 countries in East Asia and the pacific, Eastern Europe and Central Asia, Latin America, South Asia and Sub-Saharan Africa have agreed to participate in the initiative. This suggests that the SABER process will be widely used in some of the identified policy domains. It is not yet clear how widely countries will systematically assess their education systems in all of the identified domains or will select particular domains for assessment. SABER's focus on policy assessment and improvement is an important aspect of education systems research but there are, of course, other approaches to the assessment and improvement of education systems. The data and research on the improvement of countries' performance in particular policy domains on the basis of their SABER assessments is currently being developed.

UNESCO General Education System Quality Analysis/ Diagnosis Framework (GEQAF)

The conceptual framework of the General Education System Quality Analysis/ Diagnosis Framework (GEQAF) is clearly articulated on its website (UNESCO, no date). It aims to strengthen the national capacity of UN member states in assessing their education systems based on local knowledge and expertise. The GEQAF contains 15 analytical tools which are intended to cover all key aspects of an education system taking into account the interdependencies and linkages between the various aspects. The GEQAF diagnostics/ analysis is intended to strengthen the qualitative and quantitative knowledge base of countries to guide the design and implementation of general education system quality improvement interventions; to develop national indicators for general education system quality and to monitor progress in improving quality. It is not meant to support cross-country

comparisons but to support the monitoring of country progress over time. The overall structure of the GEQAF assessment process and the 15 areas of analysis are:

Development Goals:
1) Relevance/ responsiveness, 2) Equity and Inclusion

Desired Outcomes:
3) Competencies, 4) Life-long learners

Core Processes:
5) Learning, 6) Teaching, 7) Assessment

Core Resources:
8) Curriculum, 9) Learners; 10) Teachers, 11) Learning Environment, 12) ICTs

Supporting Mechanisms:
13) Governance, 14) Financing, 15) System efficiency

Within each of these areas a set of key questions are posed which are intended to facilitate the diagnostic process. The target audience of this framework is policy makers, education planners and practitioners who wish to improve the quality of their general education system. The methodology for the use of the framework is not clearly articulated on the website. It does not outline the stakeholders to whom the key questions should be addressed; and does not identify which data and resources should be used to assess and address these questions.

The development and application of this framework is at an early stage. The framework is being piloted by countries to test its use in practice. Based on the feedback from piloting GEQAF, its Guideline and Piloting Instruments will be further refined and the Framework will be ready for adoption and adaptation. Research based upon the GEQAF framework is therefore not yet available.

The World Bank SABER and UNESCO GEQAF projects are both in the early stages of their development. Both have primarily been developed as diagnostic and operational tools for the improvement of countries' education systems but research outputs are anticipated from their implementation. The SABER process will produce country reports and regional and global reports based on cross-country data. The GEQAF project includes a library of resources intended to be continuously updated with research and case studies of "promising practices" to support countries in their implementation of the framework. The fact that these two major international organisations have developed programmes based on a whole systems approach to education is promising for the development of this area of research in the future. A framework which has been developed with a more specific focus, on education systems in emergency situations, but which has been widely implemented and has produced case studies and research outputs, is that of the Inter-Agency Network for Education in Emergencies (INEE).

INEE Inter-Agency Network for Education in Emergencies.
The Inter-agency Network for Education in Emergencies (INEE) Minimum Standards for Education (2010) are a tool developed to help achieve a minimum level of educational access and quality in emergencies through to recovery. They can be seen as providing a conceptual framework of the essential aspects of an education system in an emergency situation. Some of the content of these standards is specific to emergency situations but much of the content is more generally applicable. The following five domains are covered:

1. **Foundational Standards**: these standards include coordination, community participation, and analysis. These standards are intended be applied across all domains to promote a holistic quality response.

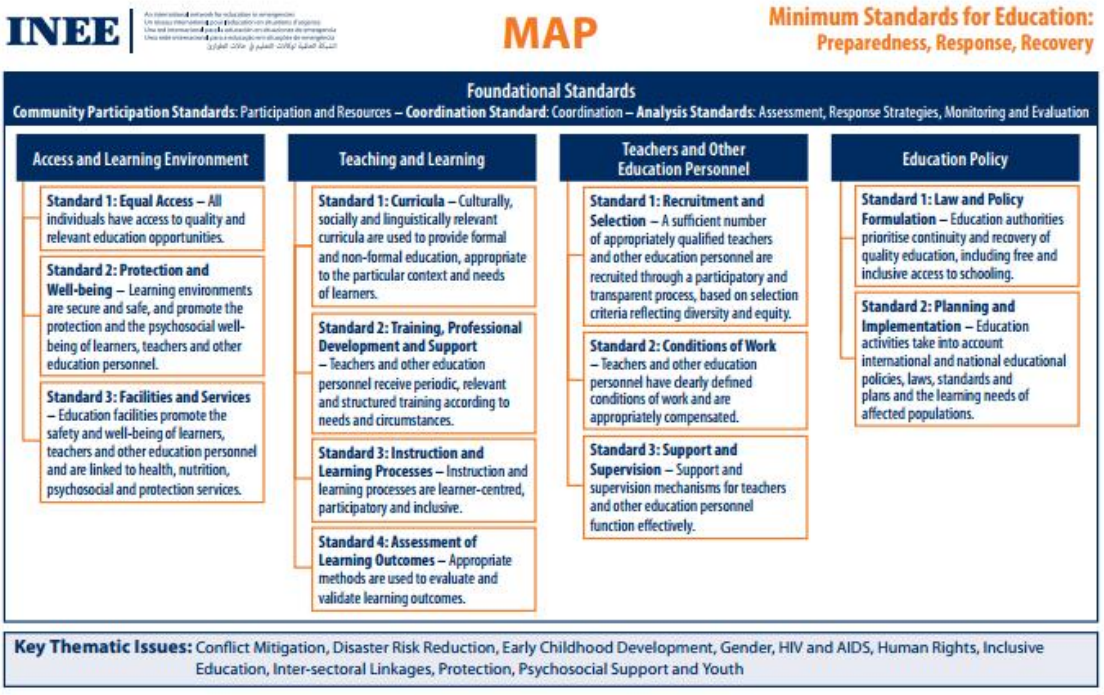
2. Access and Learning Environment: standards in this domain focus on access to safe and relevant learning opportunities. They highlight critical linkages with other sectors such as health, water and sanitation, nutrition and shelter that help to enhance security, safety and physical, cognitive and psychological well-being.

3. Teaching and Learning: these standards focus on critical elements that promote effective teaching and learning, including curricula, training, professional development and support, instruction and learning processes, and assessment of learning outcomes.

4. Teachers and Other Education Personnel: standards in this domain cover administration and management of human resources in the field of education. This includes recruitment and selection, conditions of service, and supervision and support.

5. Education Policy: standards in this domain focus on policy formulation and enactment, planning and implementation.

Map: Minimum Standards for Education (INEE 2010, p.134)



These standards are interdependent. A detailed description of each of the standards and the key actions needed to achieve them are provided in the INEE Minimum Standards for Education Handbook (2010).

Development of the Standards

They were developed through a consultative process that engaged national authorities, practitioners, policy-makers, academics and other educators. More than 2,250 people from over 50 countries participated in a series of regional workshops to develop, debate and agree on the original minimum standards in 2003-2004. In 2009-2010, a similar consultative

process was undergone to update the standards: more than 1,300 representatives of national authorities, international, national and local NGOs, UN agencies, academic and research institutions from 52 countries participated in the update process.

Use of the Standards/ research outputs

The standards have been widely used in emergency situations around the world. 19 case studies of the application of the standards, challenges in their use and outcomes are described on the INEE website http://www.ineesite.org/en/minimum-standards/case-studies. Some of these use the overall framework of standards while others have implemented selected standards. The INEE Minimum Standards Assessment Report (2012) received 701 responses to an online survey regarding their use. 31% of respondents said that they used the minimum standards for research. One survey respondent explained, her "research parameters [are] made more inclusive by making sure the INEE MS Domains are covered." (INEE 2012, p28). Others identified that the INEE MS gave a framework for their studies on education in emergencies. An annotated bibliography of 50 articles, papers and reports, identified through a desk review, which examine the INEE MS or use them as a reference is available online http://www.ineesite.org/en/minimum-standards/bibliography.

The conceptual frameworks of the World Bank's SABER programme and UNESCO's GEQAF focus on the components which make up the education system. The INEE framework takes a similar approach but it's foundational, access and learning environment standards emphasise the importance of the education system's interaction with the wider community and other sectors of society. The Edqual conceptual framework also highlights the importance of the interaction of the education system with the home and community environment.

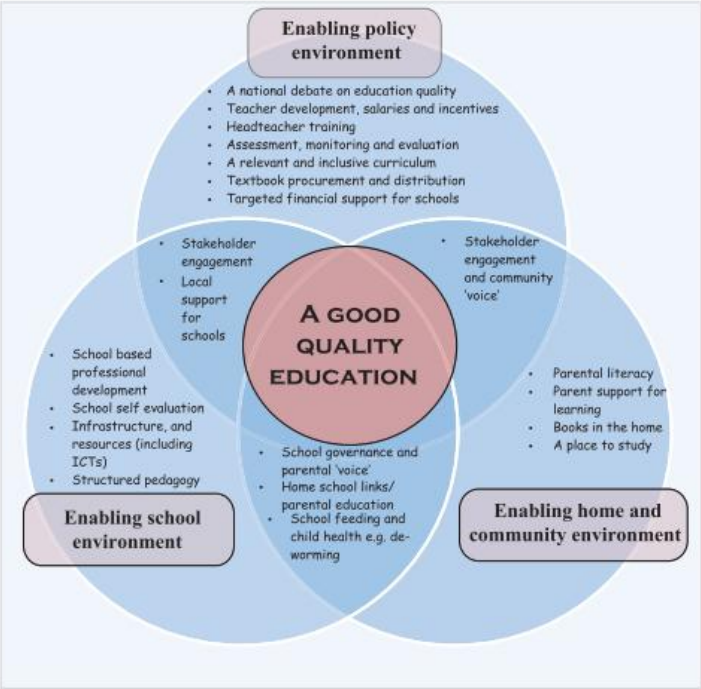
Education Quality in Low-Income Countries (Edqual) Conceptual Framework

Tikly (2011) describes the conceptual framework developed and used by the five year DFID-funded Implementing Education Quality in Low-Income Countries (EdQual) Research Programme Consortium (RPC). This is a framework for researching education quality in low-income countries. Tikly critiques dominant approaches to researching education quality, namely the human capital and rights based approaches. Edqual's own conceptual framework is based on social justice principles and draws upon the "capabilities" approach to education. Three inter-related principles are identified which it is argued can be used to evaluate the quality of education systems in relation to social justice principles. These are:

1. That education should be inclusive: that all learners are enabled to achieve specified learning outcomes. The focus here is not only on access to the necessary resources to learn but on overcoming economic, social and cultural barriers that prevent individuals and groups from converting these resources into desired outcomes or functionings.
2. That a quality education must be relevant, i.e. that learning outcomes must contribute to sustainable livelihoods and wellbeing for all learners, must be valued by their communities and consistent with national development priorities in a changing global context.
3. That education should be democratic in the sense that learning outcomes are determined through public debate and ensured through processes of accountability.

The framework is outlined in relation to three intersecting contexts, namely the policy context, the home/community context of the learner and the context of the school.

A framework for understanding education quality in Africa. (Tikly 2011, p17)



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There are five main Edqual research projects in Africa in the areas of school effectiveness, language and literacy, ICTs in basic education, implementing science and maths curriculum change and leadership and management for quality improvement. In this paper, evidence from the EdQual projects is used to illustrate the framework. Tikly identifies that the Edqual research programme has taken a mixed methods approach and that this is appropriate for research carried out according to social justice principles. The emphasis is on recognising the complex and multidimensional nature of the issues relating to the quality of education as they impact on different groups of disadvantaged learners. Data arising from different methodologies are brought together to provide a thick description of the issues involved and in order to answer the research questions.

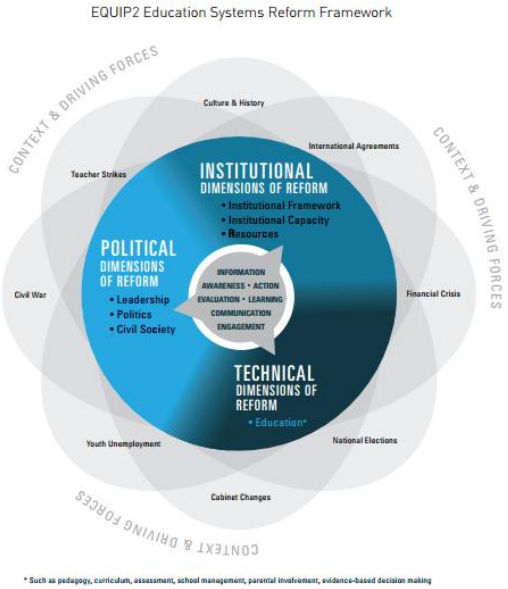
The focus of this framework is on quality in education but it takes a perspective which includes the whole education system and beyond. Its inclusion of an enabling home and community environment as one of the essential domains of quality education offers a different perspective from many of the other conceptual frameworks which focus mainly on the education system itself. In relation to school, home and community links, EdQual analysis of SACMEQ data (Smith and Barrett 2010) points to the central importance of the home and community environment in relation to determining the quality of education, particularly for the most socio-economically disadvantaged groups of learners. The authors argue that whilst the education system and schools cannot solve these issues which have their roots in wider dynamics of inequality, they can play a role in mediating them through fostering improved links with the community. For example, schools can provide adult basic education opportunities to parents and can educate them about ways to create a more enabling home environment for their children.

This paper clearly describes a conceptual framework for education systems research. A programme of research is outlined which has been conducted based upon the framework. The quality of this research cannot be assessed on the basis of this paper. No evidence was found of this framework being used beyond the Edqual research programme.

EQUIP2's education system reform conceptual framework

EQUIP2's conceptual framework is described by Gillies (2010). It takes a different approach to those frameworks described above. It is an analytical tool based on a theory of change in education. This framework does not attempt to identify what specific changes in curriculum, teacher training, school management, or financing are needed to improve education quality. Instead, this framework applies systems thinking to better understand how to introduce and foster sustainable change in the complex, dynamic system that is education. The framework is based on the interaction among three major dimensions of the education system—political, institutional, and technical. These dimensions are not independent elements, but rather are interactive factors that both create and respond to change. The EQUIP2 framework is used for analysing issues and developing strategies for system improvement, which emphasises alignment and coordination among the three dimensions of system change.

EQUIP2 Education Systems Reform Framework (Gillies 2010, p.37)



This framework draws upon basic principles of systems thinking, as set out by Meadows (2008):

- A system is more than the sum of its parts. Information is one of the key factors influencing the connections and relationships between parts in the system.
- The function, or purpose, of the system drives system behaviour. Sometimes the actual function is not obvious, and may be different from the stated purpose.
- The structure of the system is a source of behaviour.
- The foundations of a system are stocks and flows. Stocks are the parts that you can see, count, and measure at any given time. Stocks can be physical—like teachers, books, schools, but they can also be intangible factors like information, beliefs, mental models, self-confidence, goodwill, or credibility. Flows are the elements that change stocks over time, which can also be physical (new schools, graduates of teacher colleges) or intangible (new information, new models, experiences).
- Feedback loops are causal connections between stocks and flows. Feedback loops can work to balance the system and return it to equilibrium, providing both a source of stability and a source of resistance to change. Reinforcing loops can strengthen existing trends, which can lead to growth or collapse.

Glouberman and Zimmerman's (2002) research into complexity theory provided insights into the nature of the education system as a complex, dynamic system.

In developing the framework, insights were gained from Fullan's (2001) in-depth research on education system reform, which emphasises the contextual and dynamic nature of introducing change in the complex political-institutional environment of education. Fullan distingushes between reculturing and restructuring to make the point that organisational reorganisation alone is not sufficient to address the critical human aspects of change. His work emphasises that progress is measured in understanding and insight rather than only in action steps.

Gillie's reports the findings of a two-year study of reform efforts supported by international donors in five specific national systems in the period between 1990 and 2009: Egypt, El Salvador, Namibia, Nicaragua, Zambia. A key finding of the study was that for effective and durable reform, all specific interventions, policy reforms and project activities — decentralisation, service delivery, dialogue, information and analysis, teacher training, workshops, textbooks and testing — must be understood and strategised in the context of longer-term goals and trends. This paper clearly describes the conceptual framework, but the case study methodology is not transparent.

The focus of results section a is on theoretical material and conceptual frameworks, therefore an assessment of the overall quality of the research evidence in this section cannot be made.

b. Discussion papers, Literature Reviews and Strategy Documents proposing a conceptual framework for education systems

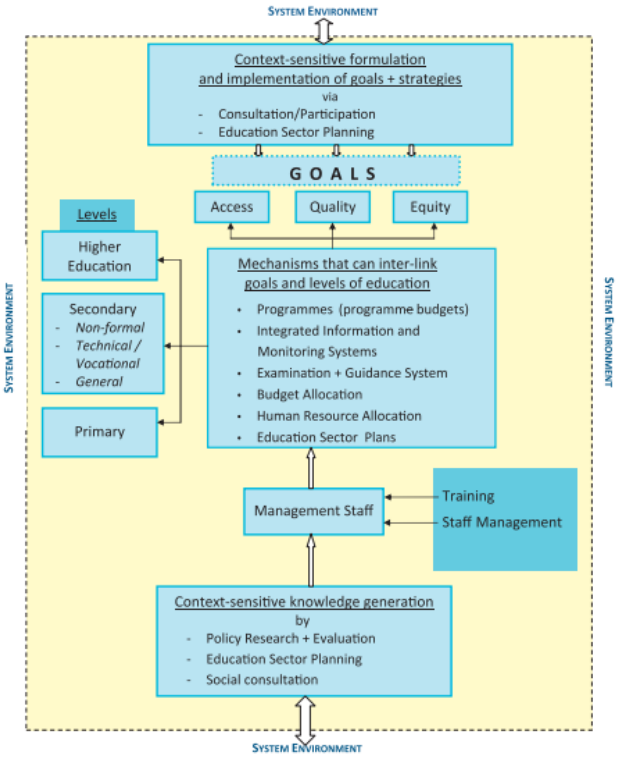
Gottelmann-Duret and Bahr (2012) look at strengthening education systems using the perspective of system analysis drawn from social sciences. The functional necessities of social systems conceptualised by Parsons (1951) are outlined as follows:

- Adaptation: Social systems are open systems which interact with their environment for the definition of general system goals, the gathering of resources, provision and redistribution of social benefits.
- Goal attainment: A social system has to set operational objectives and organize actions to reach them.
- Integration: The values and norms of all players in the system have to converge in order for them to work towards the goals.
- Latency/ maintenance: Social systems need to build on elements or mechanisms that are integrative over time in order to fulfil these functions. These elements generally change slowly.

They argue that this can be applied to educations systems by ensuring interaction with other sectors and different groups in society to identify educational development needs; leading players from inside and outside the system to achieve goals in a holistic manner; and taking a long term, sustainable perspective in formulating education policies and strategies.

This paper draws upon a review of data, research results and field experience of the UNESCO International Institute for Educational Planning and presents a review of the strategy papers of major international development assistance agencies. It applies the systems approach to a discussion of the education Millenium Development Goals and argues that they have not been pursued in an integrated manner. The paper recommends the use of a whole systems approach for research and strategy development in education, saying this is not widely used currently. On the basis of the authors' systems analysis, a conceptual framework of the crucial mechanisms for the strengthening of education systems is proposed:

Crucial mechanisms for the strengthening of education systems (Gottlemann-Duret and Bahr 2012, p.78)



The paper recommends in particular the strengthening of certain regulatory mechanisms including: Planning, monitoring and information; redistribution mechanisms; student flow regulation and quality management mechanisms; participation of the main groups of players within and outside the education system; incentives and support.

This paper draws upon a wide range of sources but its review methodology is not clearly described.

Wallace (2007) proposes a framework for revitalisation of rural education and training systems (RET) from a literature review. The key requirements outlined are:

1) A clearly developed policy framework for RET is established
2) Dialogue between policy bodies and funding agencies that support RET
3) Strong linkages exist between formal providers and the range of non-formal programmes relating to RET
4) Support services restructured to ensure a close working partnership between research organisations and extension/training services that promote sustainable livelihoods
5) Curriculum processes and curriculum contents reformed at national and local levels
6) Provision of access to and appropriate training for deprived groups in rural society at large, aiming towards poverty eradication
7) Selection of content balances theoretical underpinning with context-specific material
8) Improvements in teaching of practical skills are supported by national schemes for assessment of competency-based learning
9) Policy support for human resource development at all levels within RET institutions and organisations

10) Leadership of both enabling and training organisations is visionary, entrepreneurial and effective.

The author identifies main aims within each of these areas.
The purpose of this paper is to propose a conceptual framework. The review of RETs upon which this is based cannot be assessed on the basis of this paper but is described elsewhere (Atchoarena and Gasperini 2003).

A guidance paper by Lewin (2007) draws on analysis undertaken by the Consortium for Research on Access Equity and Transitions (CREATE) to outline three different styles of long-term planning to manage growth of access to secondary education within sustainable resource envelopes. 1) Planning Lite, uses a macro approach with little detail to establish order of magnitude estimates of the financial demands created by commitment to enrolment targets. 2) Framework National Plans which use Education Management Information System (EMIS) and census data to project systematically at national or regional level and can be built to reflect budget lines in a Medium Term Expenditure Frameworks (MTEF). 3) Participatory Planning which generates plans shaped by inputs from the local level e.g. schools or districts, which are aggregated and harmonised at higher levels. The author distinguishes between aspirational and target-generating approaches then describes the processes and tools that are needed to develop long term plans for expanded access that can reconcile goals and targets with realistic resource envelopes. These processes are designed to include mechanisms to promote consensus and build commitment. The nature of Medium Term Expenditure Frameworks (MTEF) is then explored as a necessary tool to manage implementation. This observational paper offers a logical argument but the data collection upon which this is based is not clear.

The reviews and discussion papers in section b are mostly of moderate quality.

c. Individual country case studies

Nebres (2009) looks at three large-scale education reform initiatives in the Philippines. The author carried out a statistical study to identify critical variables distinguishing high-performing from low-performing elementary schools in similar socio-economic conditions. The variables identified were: leadership of the principal and support of the community. This informed the school-based management (SBM) approach that was taken. The author reports that results in the National Achievement Test (NAT) were significantly improved for the schools involved in the three projects. Guzman (2006) discusses the influence of the SBM approach in structuring the Philippine education system. Eight key elements of successful SBM schools are identified: (1) an active vision, (2) meaningful decision-making authority, (3) distribution of power, (4) development and use of knowledge and skills, (5) collecting and communicating information, (6) rewards for progress, (7) shared leadership, and (8) cultivating resources. Guzman's paper presents data regarding the Philippine basic education performance indicators which show no clear impact on teaching and learning from the SBM approach. However, this earlier study's data may be superceded by that presented in Nebres' study.

Bolivia's education system went through a long and complex process of reform between 1992 and 2002. Contreras and Simoni (2003) highlight the key characteristics of the reform to systematise the intracacies and compare it to other Latin American reforms. One feature of the reform was the introduction of a constructivist approach centred on students and based on active learning. The authors identify the importance of providing materials and ensuring institutional capacity. They propose that going to scale requires creating a learning organisation featuring integrative processes, professional networks, and a new style of leadership and that learning requires opportunities to reflect on practice. The authors found that continuity in policy and leadership is critical to achieving lasting results. This is a descriptive study. Little information is provided on data collection and methods.

It is continuity of education strategies that is found to be one of the leading factors that has allowed Cuba's education system to perform so well under severe resource constraints (Gasperini, 2000). Sustained high-levels of investment in education and a comprehensive and carefully structured system are also identified. The system is characterised by:

- Quality basic education and universal access to primary and secondary school.
- Comprehensive early childhood education and student health programs (established as
  part of the commitment to basic education).
- Complementary educational programmes for those outside school-literacy, adult and nonformal education (again as part of the basic education commitment).
- Mechanisms to foster community participation in management of schools.
- Great attention to teachers (extensive pre- and in-service training, high status and morale).
- Incentives, transparent system of accountability, strategies for developing a culture of professionalism, rewards for innovation.
- Low-cost instructional materials of high quality.
- Teacher and student initiative in adapting the national curriculum and developing instructional materials locally.
- Carefully structured competition that enhances the system rather than the individual.
- Explicit strategies to reach rural students and students with special needs.

This paper offers observations and discussion but its methodology is not described.

A review of education delivery in the Democratic Republic of Congo (AfriMAP & OSISA 2009) looks at the efforts that are being made and will be needed to improve the governance of the education system. The integration of education within the Growth and Poverty Reduction Strategy Paper means that objectives for the sector are, helpfully, framed within a global vision for the reduction of poverty and the achievement of the millennium development goals (MDGs). The principal challenges identified are the weaknesses in the planning and budgetary systems and the mismanagement of funds within the education system. That is, the problems are not specific to a particular level of education or area of activity or employment, but exist at the highest systemic levels. Action to address the poor performance of schools throughout the country must start at the level of planning, allocation and the management of resources. This paper offers a review, a country case study and discussion but its methods are not clear.

Ward, Penny and Read (2006) also discuss governance and funding frameworks in their book on education reform in Uganda. In 1998 the Government of Uganda (GoU) began implementing an ambitious programme of educational reform, the Education Strategic Investment Plan (ESIP) (1998–2003). The technical analysis and consultation that underpinned the ESIP not only set a national framework for GoU education planning and budgeting but also constituted a breakthrough in relations between the GoU, civil society and its development partners. Since 1997 Uganda has had to address the challenge of accessing ever increasing numbers of children into an already over-burdened education system. The author offers a perspective on how political commitment, combined with a relatively clear and rational conception of reform, and the provision of generous external financial support, assisted the country in making significant progress towards meeting its MDG obligations. The book covers a lot of areas and the research questions are stated. However, the design and methodology is not clear.

Education reform in post-conflict countries offers an interesting body of research as systems are being rebuilt. Sommers & Buckland (2004) investigate the restructuring of education in Kosovar. They suggest that conflicts can create unusual opportunities to introduce changes that – with time, patience and local involvement – can transform education systems. The authors are clear about methodology and research questions. Nicolai (2007) examines the emergence, development and management of the education system in the Occupied

Palestinian Territory between 1994 and 2005. A significant step has been that the new curriculum reflects Palestinian culture, history and identity, whereas their previous education systems did not. This is a descriptive study with a reasonably well described methodology.

The World Bank (2005) produced a high quality study of education and post-conflict reconstruction and draws on a literature review, a database of key indicators for 52 conflict-affected countries, and a review of 12 country studies. The authors discuss the World Bank's Conflict Analysis Framework (CAF), one of 12 conflict analysis tools currently available. Most of these tools do not include analysis of the role of education in contributing to conflict or mitigating its effects. There is a growing need for supplementary tools that specifically focus on education issues, but these should be treated as components of wider conflict analyses rather than as stand-alone tools. 4 key factors are identified as providing a framework for approaching the reconstruction of education after conflict: 1) sound policies and committed leadership, 2) adequate operational capacity at all levels, 3) finance to scale up measures that work, 4) focus on results and accountability. There are many references in the paper to further frameworks:

- The paper outlines Sinclair's Principles of Emergency Education (Sinclair, 2003) as key principles for a starting point for reconstruction.
- The paper outlines an operating environment framework which allows some flexibility to accommodate the complex range of circumstances that post-conflict reconstruction encounters.
- There has been fairly rapid progress recently in thinking through the Bank's role in post-conflict reconstruction generally, including linkages to Comprehensive Development Frameworks (CDF), Poverty Reduction Strategy Papers (PRSP), and Heavily Indebted Poor Countries (HIPC).
- In addition to the review of the relationships between conflict and wider development frameworks, poverty reduction, and debt relief, important work has been undertaken on the framework of Low Income Countries Under Stress (LICUS).
- The study recommends the framework of prevention, transition, and recovery offered in the World Bank Operation Policy "Development Cooperation and Conflict" OP2.30 as a basis for more flexible approaches to post-conflict reconstruction.

Section c consists mostly of observational descriptive case studies. The quality of these are an even mix of high, moderate and weak studies.

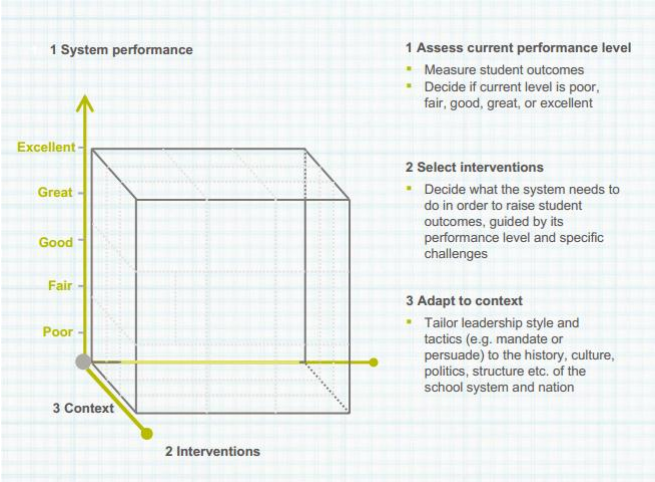
d. Comparative case studies/ comparative research across countries

A number of research studies use comparative analysis to explore education systems.

The McKinsey report (Mourshed, Chijioke and Barber 2010) is a case study of education systems in 20 countries and is widely cited in education systems discourse. It has a clear approach and methodology. The aim was to understand precisely which interventions occurred in each school system and when, and how these interventions interacted with each other and with the system's broader context to deliver better outcomes for students.

Systems were categorised by level of improvement along different stages of a performance spectrum. The methodology of Hanushek and Woessmann (2010) was used to normalise the different assessment scales of student outcomes discussed in the education literature on a single universal scale. Once the data had been normalised, school systems' performance levels were classified into four broad groupings across time: poor, fair, good, great, or excellent. Each system was then mapped, with its interventions, onto a performance stage (poor to fair, fair to good, good to great, and great to excellent) and the intervention patterns revealed by the data were analysed. The authors developed a framework of three dimensions to be integrated by systems leaders for crafting and implementing an improvement journey:

A system leader must integrate three dimensions when crafting and implementing an improvement journey (Mourshed, Chijioke and Barber 2010, p27)



The authors find that:

- A system can make significant gains from wherever it starts.
- There is too little focus on 'process' in the debate today.
- Each particular stage of the school system improvement journey is associated with a unique set of interventions.
- A system's context might not determine *what* needs to be done, but it does determine *how* it is done.
- Six interventions occur equally at every performance stage for all systems.
- Systems further along the journey sustain improvement by balancing school autonomy with consistent teaching practice.
- Leaders take advantage of changed circumstances to ignite reforms.
- Leadership continuity is essential.

Coffield (2012) offers a critique of this report and suggests the evidence base is thin and the central arguments are implausible. The critique also suggests that the McKinsey report has an impoverished view of teaching, it underplays the role of culture in education and omits any mention of democracy.

Analysis of education quality in Central Asia in a five-country case study finds higher standards a popular goal but an elusive target (Chapman et al. 2005). The research uses a framework which gives a detailed outline of the information gathered about each case organised around four themes: 1) Reforms in the context of economic and social transition, 2) The education reform process, 3) Successful and unsuccessful reforms, and 4) Constraints and opportunities (Institutional, economic and fiscal, political, and cultural social). This paper is of high quality. Data was collected using a variety of methods: document analysis, interviews and analysis of statistical data. The research methods were clearly described.

In his comparative analysis of the education systems of Turkey and Canada, Guven (2011) found major differences in the goals, the system administration and the school structure of the two countries and a few similarities. This was based upon analysis of policy and legal documents. The study adopted the classic model presented by Bereday (1964) for comparison of education in two countries. The methodology for document selection and analysis is not clearly explained. Gordon & Qiang's study (2000) compares the education systems of China and South Africa. The study discusses rural education using a basic framework based on three aspects of context: Factors external to the schools; Characteristics

of the school system; Factors influencing school practices. No methodology is described for data collection and analysis in this study.

A high quality statistical report by UNESCO (2007) provides comparable education indicators on an annual basis for OECD and middle-income countries. Indicators are interpreted on educational attainment, finance, participation, teachers and the learning environment. It uses the International Standard Classification of Education framework (UNESCO 1997) which is comprised of standard concepts, definitions and classifications that are used to produce internationally comparable education data. By providing a sound basis for comparisons between different countries' education systems, it aids policy-makers and others who are looking to learn from international experience to benchmark their performance.

Section d comprises a mix of analytical and descriptive comparative case studies of low and high quality. It also includes UNESCO statistical reports and standards which are of high quality.

4. Discussion and Conclusions

A wide range of conceptual frameworks were identified regarding education systems in low and middle income countries but these were not accepted widely or used extensively as a basis for research. In section a, an overview of major international organisations and programmes which have developed conceptual frameworks of education systems was presented. Some of these had been developed as part of an implementation guide or programme to improve education systems, while others had the primary purpose of underpinning education systems research. Some, such as the World Bank's SABER project, aimed to encompass the whole education system. Others had a more specific focus, for example, the INEE framework on education systems in emergency situations and the Edqual framework on education quality, but their perspective included the wider education system.

Overall, these frameworks had not been used extensively as the basis for research. Research outputs varied. The papers describing the Edqual and EQUIP2 conceptual frameworks reported the findings of specific research programmes based on these. But no evidence was found of their frameworks being used beyond these specific research programmes. The INEE framework had been implemented widely and case studies and research had been produced as a result of this in the specific area of education systems in emergency situations. In some cases, although the conceptual framework addressed the whole education system, selected aspects of the framework were being implemented. For example, many of the case studies based on the INEE framework focused on the implementation of specific minimum standards rather than the whole framework. In the SABER project, progress was varied across different policy domains. It was not yet clear how widely countries will systematically assess their education systems in all of the identified domains or will select particular domains for assessment. The World Bank SABER and UNESCO GEQAF projects are both in the early stages of their development and have not yet produced significant research outputs. The fact that these two major international organisations have developed programmes based on a whole systems approach to education is promising for the development of this area of research in the future.

The focus of these conceptual frameworks varied considerably. The World Bank's SABER programme and UNESCO's GEQAF had a focus on the components which make up the education system. The INEE and Edqual frameworks gave more emphasis to the importance of the interaction of the education system with the wider community and other sectors of society. Equip 2's conceptual framework took a different approach, applying concepts of systems theory to understand the processes of change needed in the complex education system.

Section b includes discussion papers and reviews which propose conceptual frameworks for education systems. Gottelmann and Bahr (2012) drew upon another model of systems analysis to develop a conceptual framework for the strengthening of education systems. The development of this framework was based upon a review of strategy papers and other data. Wallace (2007) proposes a framework for education reform with a focus on a specific type of education system, rural education and training systems. Again, his framework is based upon a literature review. Lewin (2007) outlines approaches to planning growth of access to secondary education. Research based upon the conceptual frameworks outlined in this section was not identified.

A significant body of education systems research is in the form of descriptive country case studies. The individual country case studies identified through this rapid review are outlined in section c. The majority of these studies do not clearly articulate a conceptual framework upon which their view of the education system is based. Many focus upon describing processes of change to the education system during a period of education reform.

Comparative case studies are reviewed in section d. The McKinsey report (Mourshed, Chijioke and Barber 2010) is the major report in this area and develops a framework of three dimensions to be integrated by system leaders for education system improvement. The report describes a methodology for normalising assessment results for comparison. UNESCO provide a useful framework for comparison of international data (UNESCO 1997 & 2007). Other papers are based on frameworks for case study or comparative analysis (Chapman et al. 2005; Guven 2011).

This was a rapid review of the literature with a limited search strategy and so themes emerging from the review must be tentative. An overarching theme emerging from the research in this review is that of improving education systems. This is discussed in terms of strengthening education systems; education reform and education quality.

The World Bank takes a whole systems approach to strengthening education (World Bank 2011). Gottelmann and Bahr (2012) also discuss strengthening education systems using a social science systems perspective looking at how component parts of a system work together.

A significant proportion of the research identified for this review focuses on education reform. Wallace (2007) looks at multiple aspects of the system for reform of rural education but most of the body of research discusses reform in the context of the political economy. The framework for education system reform outlined in Gillies (2010) for case study analysis addresses the interaction between political, institutional, and technical dimensions. Chapman et al (2005) gathered data on education reform using themes framed in terms of the political economy including: reforms in the context of economic and social transition; constraints and opportunities (institutional, economic and fiscal, political and socio-cultural).

Several of the individual country case studies which discuss the reform of an education system in terms of the political economy, have a particular focus on the governance of the education system. AfriMAP and OSISA (2009) focus on improving governance of the education system in the Democratic Republic of Congo. Nebres (2009) and Guzman (2006) describe the decentralisation of decision-making authority through school-based management. Ward et al. (2006) look at reform in Uganda focussing on governance and funding frameworks. Several studies highlighted the importance of leadership in the education reform process (Nebres 2009, Contreras and Simoni 2003).

Education quality is a related theme that emerges from this review. UNESCO put forward their GEQAF framework for education system quality analysis which aims to include all aspects of education systems. The EdQual framework for understanding education quality uses social justice principles to look at all aspects of the education system (Tikly 2011).

Gasperini (2000) discusses selected aspects of the education system that he argues have created high quality education in Cuba. Mourshed, Chijioke and Barber (2010) focus on school results and different aspects of the systems that lead to success.

Another area of education systems research is that which focuses on education in emergencies and post-conflict situations. The INEE (2010) standards and the World Bank (2005) take a whole systems perspective to be applied in emergency situations and post-conflict countries. Nicolai (2007) breaks down the component parts to examine the emergence, development, and management of the education system in the Occupied Palestinian Territory. Dennis and Fentiman (2007) look at issues of context and the interrelationships between the providers rather than all components of an education system.

In this review, several conceptual frameworks of education systems were identified which aim to conceptualise the whole system and how its component parts interact. However, only a very limited number of the research studies which discussed a country's education system or conducted cross-country comparisons, did so using a systematic approach which examined the component parts of an education system and how they interact. Many of the studies took a particular perspective in their discussion of an education system, for example discussing the reform of an education system from a political economy perspective. Some of the studies focused their analysis on particular aspects of the education system, such as governance.

Overall, a few high quality studies were identified in the field of education systems research but the majority of studies identified through this rapid review were of moderate or low quality. Many of the papers proposing a conceptual framework for education systems research based this on a review of evidence or literature but did not present a review methodology. The methodology of country case studies, when stated, was varied, including document analysis, interviews and statistical analysis, but many of the case studies were descriptive and did not present a clear methodology. Many of the studies which did describe a methodology used analysis of policy documents. Although this is a valid method for describing how an educations system is intended to work, it does not provide an insight into how the system actually works in practice. A few high quality studies, such as The McKinsey Report (Mourshed, Chijioke and Barber 2010), gave a detailed account and background of methodology and were relatively open, transparent and cogent. However, a closer inspection of The McKinsey Report by Coffield (2012) found flaws in the work.

This rapid review identified a small body of evidence in the field of education systems research. However, a comprehensive search of the literature could not be completed due to time constraints. Within the limits of this small body of evidence, the studies covered a range of low and middle income countries in Africa, Asia and Latin America. The findings of the evidence were inconsistent (mixed). Although some common themes did emerge, the conceptual frameworks and methods used by different studies were very varied so there was little basis for direct comparison of study findings.

This rapid review on education systems research found that there are a wide range of conceptual frameworks of education systems which have been proposed both by international organisations and within individual research papers. Some of these aim to encompass the whole education system while others have a more specific focus. Some attempt to define the component parts of the whole education system while others focus on the processes of change to the system. Many draw on theories from social sciences systems approaches. The extent of research into whole education systems based on these conceptual frameworks is limited overall. There was not a consistency of approach across studies which makes comparisons and the development of a strong evidence base difficult. It could be argued that there is a need for more agreement regarding the conceptual frameworks underpinning education systems research so that bodies of evidence can be developed which are consistent with these.

The focus of this rapid review was on the literature examining whole education systems and the conceptual frameworks which underpin this. Following on from this rapid review, it may be useful to conduct further reviews of the scope and quality of research focused on particular subsystems or components of education systems and whether this research is carried out in the context of a whole systems perspective.

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6. Appendices

Appendix 1: Search Strategy for ERIC, BEI and AEI databases

Search 1:
((su.Exact("education systems") OR su.Exact("education systems" OR "systems approach") OR su.Exact("education systems" OR "systems analysis" OR "systems approach") OR ti(education* NEAR/3 system*)) AND (su.Exact("developing countries") OR su.Exact("developing countries" OR "developing nations") OR ab("develop* countr*") OR ab("develop* nation*") OR ab("low and middle income countr*") OR ab("low income countr*") OR ab("middle income countr*"))) Journals") – limited to scholarly journals.

Search 2:
su.Exact("comparative education") AND (su.Exact("education systems") OR su.Exact("education systems" OR "systems approach") OR su.Exact("education systems" OR "systems analysis" OR "systems approach") OR ab(education* NEAR/3 system*)) AND (su.Exact("developing countries") OR su.Exact("developing countries" OR "developing nations") OR ab("develop* countr*") OR ab("develop* nation*") OR ab("low and middle income countr*") OR ab("low income countr*") OR ab("middle income countr*")) –limited to scholarly journals and reports.

Search 3:
ab(framework) AND (su.Exact("education systems") OR su.Exact("education systems" OR "systems approach") OR su.Exact("education systems" OR "systems analysis" OR "systems approach") OR ab(education* NEAR/3 system*)) AND (su.Exact("developing countries") OR su.Exact("developing countries" OR "developing nations") OR ab("develop* countr*") OR ab("develop* nation*") OR ab("low and middle income countr*") OR ab("low income countr*") OR ab("middle income countr*"))

Appendix 2: Data Extraction Questions

1. What type of paper/ source is it? E.g. literature review, strategy document, country case study etc

2. Does it use a conceptual framework?
   - Summarise the conceptual framework
   - If diagram available, add diagram or link to it
   - Is the conceptual framework based on research?
   - Is there research based on the conceptual framework? (Could be individual research study or research programmes organised around the framework)

3. What is the purpose of the study/ paper?

4. What are its main findings?

5. Assess the quality of the study using DFID how to note.

6. What geographical areas does the study cover? E.g. countrie(s), regions etc

7. Additional Information

Authors
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