



Title Registration for a Systematic Review: Education Interventions for Improving the Access to, and Quality of, Education in Low and Middle Income Countries: A Systematic Review

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TITLE OF THE REVIEW

Education Interventions for Improving the Access to, and Quality of, Education in Low and Middle Income Countries: A Systematic Review

BACKGROUND

The Issue

Education is considered essential for sustainable development and is a fundamental human right, as stated by article 26 of the Universal Declaration of Human Rights (UN, 2013a). There is widespread consensus on the importance of education for human well-being (Glewwe & Kremer, 2005). For instance, Sen (1999: 296) argues that education has a “direct relevance to the well-being and freedom of people” as well as an “indirect role through influencing social change” and “economic production.” In addition to the intrinsic value of education in and of itself, research suggests positive relationships between education and economic growth and earnings (Barro, 1991; Duflo, 2000; Psacharopoulos & Patrinos, 2004), and this relationship becomes more pronounced in poorer countries (Psacharopoulos, 1985; Mankiw et al., 1992). Moreover, various studies have provided evidence of a link between better education systems and other indicators of human development, including health status, maternal and infant mortality, lower population growth and lowered crime (Glewwe, 2013; Hillman & Jenkner, 2004; Hannum & Buchmann, 2003). In other words, individuals with high levels of education are more likely to be employed, generate higher income, overcome economic shocks and maintain healthier families (World Bank, 2011).

Substantial efforts have been made in recent years to improve access to education in Low and-Middle-Income-Countries (LMICs). While there has been significant progress, this has been uneven and challenges remain. For instance, the net enrolment rate for children of primary school age increased from 82 to 90 per cent between 1999 and 2010 (UN, 2013b). However, improvements in enrolment rates slowed down considerably after 2004 and in 2010, 61 million children of primary school age were still out of school, more than half of them (33 million) in Sub-Saharan Africa (UNESCO, 2012). While there has been progress in reducing the number of girls excluded from education, from 58 per cent in 1999 to 53 per cent in 2010 (UN, 2012), girls are still more likely than boys to miss out on schooling, with girls’ participation rates remaining lower than those of boys in 53 developing countries, with disparities particularly pronounced in West Asia and Sub-Saharan Africa (UN, 2012).

The increase in primary education has increased the demand for secondary education and enrolment in secondary school has risen by almost 10 percentage points during the last ten years (World Bank, 2013). This demand also presents a challenge for many countries; 71 million children of lower secondary age (12-15 years) are out of school worldwide (UN, 2012), with three of four out of school adolescents residing in either Sub-Saharan Africa or

South and West Asia (UNESCO, 2012). Adolescents from disadvantaged backgrounds are more likely to miss out on education, with those from poor and rural households being more likely to be excluded, and girls being more likely than boys to not attend lower secondary school (UN, 2012).

Over the last decades much attention has been focused on addressing issues related to access to education, but more recently attention has shifted towards improving the quality of education. While there has been significant progress towards achieving education for all, in many countries the promise of schooling has failed to translate into learning (Pritchett, 2013). Children will not receive a better education just by virtue of being in school if the conditions that enable learning are not also present (Petrosino et al., 2012; Pritchett, 2013). As Glewwe (2013:3) argues, “enrolment is not the final goal of education policy. The ultimate goal is to prepare children for a better life when they are adults.” Studies measuring learning outcomes among school children across low- and middle-income countries find consistently low levels of learning, with hundreds of millions of children leaving school without basic numeracy and literacy skills (Pritchett, 2013; Robinson, 2011; UNESCO, 2012).

According to the Education for All Global Monitoring report (UNESCO, 2013) around 250 million children in LMICs cannot read, write, or do basic maths problems. This number includes over 130 million children who are actually enrolled in primary school and yet have not acquired these basic skills, leading some commentators to suggest there is a global learning crisis (Robinson, 2011). For example, the 2010 annual assessment of the basic reading and arithmetic skills of over 600,000 children in India, conducted by ASER, found that in many states only 53 per cent of children in Grade 5 were able to read a Grade 2 level text (ASER, 2011). Similarly, the Learning and Educational Achievement in Pakistan Schools Study (LEAPS), which is a large-scale longitudinal study tracking the progress of school children in Punjab from Grades two through to six, found that by the end of Grade 3 the majority of students have not yet achieved the learning outcomes required by the Grade 2 syllabus, while around 50 per cent have not even achieved the learning outcomes by the Grade 1 syllabus (Andrabi et al, 2007).

Relevance to policy and practice

The importance attached to the role of education for human development is reflected by the international community’s continued focus on access to, and quality of, education, as demonstrated by, for instance, the Education for All (EFA) initiative (UNESCO, 2013) and the Millennium Development Goals (MDGs) (UN, 2013b). The education-related MDGs aim to achieve universal primary education for all boys and girls (MDG 2) and eliminate gender disparities in all levels of education (MDG 3) by 2015, while the Dakar Framework for Action on Education for All (EFA) provides a strategy for achieving those objectives.

Education interventions have focussed on getting children into school, whether by increasing enrolment in existing schools or building and staffing new ones where there was no school before. More recently commentators have called for a shift in focus from access to education

to learning for all (Prichett, 2013; Robinson, 2011), and this is also increasingly reflected in the education policies of major agencies. For instance, learning is at the core of the education policy of the Department of International Development (DFID) in the United Kingdom (DFID, 2013). Similarly, the World Bank education strategy for the period until 2020 is focused on learning and skills development, with ‘Learning for all, beyond schooling’ as a primary objective (World Bank, 2011).

The Dakar Framework for Action on Education for All (EFA) included a commitment that no country should be left behind in making progress towards the EFA goals due to a lack of resources and significant funding has been dedicated to education over the last decade. For instance, domestic government spending on education increased at high rates in low- and middle-income countries between 1999 and 2011, despite the global economic crisis and regional food crises (UNESCO, 2012). In low income countries, the average real annual government spending on education grew at a rate of 7.2 per cent and at a rate of five per cent in Sub-Saharan Africa (ibid), suggesting a commitment to reaching global education targets in many countries. Moreover, between 2002 and 2010, aid to education increased by 77 per cent to US\$13.5 billion, with the World Bank, the USA and the UK being the largest donors to the sector (ibid).

Nevertheless, the resources available for education in low income countries still pale in comparison to the resources dedicated to education in high income countries. In 2010, countries in North America and Western Europe spent \$7916 on primary schooling per pupil (constant US\$), in contrast to US\$134 in Sub-Saharan Africa and US\$263 in South and West Asia (UNESCO, 2012). In addition, donor spending trends from the last couple of years indicate a stagnation of aid to education and a general tightening of aid budgets as high income countries around the world attempt to rein in their spending following the global financial crisis, reversing the aid expenditure trends of the last decade (UNESCO, 2013). These trends come despite significant remaining challenges in ensuring that all children have access to high quality education, as noted above. To help inform decisions about how to spend limited resources, this review will provide a comprehensive review of the evidence on the relative effectiveness and cost-effectiveness of education interventions for improving education access and learning outcomes for primary and secondary school children in LMICs.

OBJECTIVES

This review aims to build on the work already undertaken by Petrosino et al. (2013), but with inclusion criteria covering learning outcomes more comprehensively. We will also aim to assess how education interventions affect different sub-groups of participants by incorporating sub-group analyses, and will also include a broader range of evidence to address questions relating to process, implementation and cost-effectiveness.

The primary objective of this review is to identify, assess and synthesise evidence on the effects of education interventions on children's access to education and learning in low and middle income countries.

To achieve these objectives we aim to answer the following questions:

(1a): What are the effects of different education interventions on enrolment, attendance, dropout rates, completion and learning outcomes for primary and secondary school age children in low-and-middle-income countries?

(1b): How do education interventions affect different sub-groups of participants (according to gender, age, sibling and gender order, urban or rural location, or socio-economic status)?

(2a): What intervention features are associated with relative success and failure in improving educational outcomes?

(2b): What are the contextual barriers to, and facilitators of, the effectiveness of educational interventions?

(3): What is the cost-effectiveness of different interventions in improving educational outcomes?

EXISTING REVIEWS

There is a relatively large literature of experimental and quasi-experimental evaluations assessing the impact of interventions in the education sector in LMICs. Several authors have reviewed the impact evaluation literature in order to draw wider conclusions on the effectiveness of education interventions (Petrosino et al., 2012; Baird et al, 2013; Morgan et al., 2012; Morgan et al., 2013; among others). A comprehensive review of existing systematic reviews identified fifteen systematic reviews, one review which makes use of the same dataset, one protocol, two meta-analyses and eleven non-systematic reviews (Philips, forthcoming).

The review of findings from existing reviews reveals that while there is an increasing body of systematic reviews of education interventions of relevance to LMICs, existing reviews are scattered across a wide variety of interventions and outcomes, many with mixed or contradictory results. Moreover, very few reviews link up the key stages between initial, intermediate and final outcomes. Some reviews focus mainly on enrolment and attendance, while others examine effects only on achievement. Fewer reviews cover academic completion or progression outcomes, while only one provides findings on the cost effectiveness of the interventions examined. Several of the existing reviews also suffer from methodological shortcomings and rely on searches completed several years ago.

Additionally, knowing what works is not sufficient for policy makers who also need to know “how to make it work in different contexts and environments and with different groups of people” (Davies, 2006:99). Twelve out of seventeen of the identified systematic reviews and meta-analyses focused on the effectiveness of interventions alone and reviewed only quantitative evidence to draw conclusions about what works. Among these reviews, only five performed sub-group analysis in order to explore effects across different groups of participants, quality of studies or geographical regions.

The systematic review conducted by Petrosino et al. (2012) is the most inclusive (in terms of the interventions that it covers) conducted to date. However, the authors focused primarily on outcomes related to enrolment and attendance and reported progression outcomes only when included in those studies, thus excluding studies that evaluated learning outcomes only. Additionally, the search was conducted in 2009 and studies published after that date are not included. Moreover, the review included only experimental and quasi-experimental designs, and did not engage with the theory of change of interventions and qualitative literature. Finally, the review estimated overall intervention effects, pooling different types of interventions. Sub-group-analysis was conducted, but without specifying outcome types. These issues outlined above present drawbacks for policy-makers and donors interested in being able to compare the effectiveness of interventions across outcomes and across sub-groups of participants.

INTERVENTION

Broadly defined, interventions will be included if they aim to improve the access and quality of primary and secondary education in low- and middle-income countries.

To structure our review of this broad range of interventions, we will use a framework for classifying interventions based on institutional settings to specify the types of interventions we will include. This follows a similar approach adopted by Sherman et al. (2002) in their review of the evidence on a range of different crime prevention interventions. The framework, together with a provisional list and description of interventions falling under each category, is outlined below.

Child-centred interventions

We define child-centred interventions, or ‘child settings’, as those interventions targeting children directly, focusing on improving their ability to benefit from schooling or their incentives and motivation for investing time and resources in their own education.

Interventions falling under this category include the following:

1. *School feeding programmes* typically aim to improve the general health of children, provide a safety net for vulnerable and food insecure families, and improve children’s ability to learn (Jomaa, et al. 2011). Such interventions fall into two categories: the traditional school feeding programme, where children are provided with meals in

school, and take-home ration programmes where children are provided with food in school which they can take home to their family (Lawson, 2012). In many cases the food provided is fortified or supplemented in order to give additional nutritional benefits (Jomaa, et al. 2011). School feeding programmes such as these are often targeted towards families and communities that are food insecure or have low incomes. Food for school feeding programmes is procured in a variety of different ways, but recently the focus has been on using local produce.

2. *School-based health programs* include interventions to prevent or treat illness that are delivered to children within schools. An example of such an intervention is the de-worming programme in Busia district, Kenya which provided children in schools with free de-worming treatment. The treatment was delivered by nurses and public health workers in local schools and was also combined with a course of worm-prevention classes and provision of wall charts and teacher training on worm prevention (Miguel & Kremer, 2004). Other examples include the provision of micronutrients to children (Kleiman-Weiner et al., 2013) and eye tests, followed by provision of eye-glasses (Ma et al., 2013).
3. *Providing information* to children about the potential future benefits of schooling, in terms of income, employment, and social status is thought to increase school participation, enrolment and continuation where students under-estimate the actual returns to education (Nguyen, 2008). Interventions of this type will typically involve providing information to the students about the future potential returns to schooling. The information can be presented in various ways, for example with teachers or external presenters disseminating statistics about average earnings for each level of education. Other interventions make use of role models, who share their experience of education and current achievements with children, with some programs using a combination of channels (Nguyen, 2008).
4. *Merit based scholarships* aim to improve learning outcomes by rewarding high performing students with scholarships to continue their study (McEwan, 2013). For example, an intervention in Kenya provided scholarships to girls who performed well in their 6th grade exams. The programme awarded the top 15 per cent of students in the grade with a grant to cover school fees for two years, and also a cash sum which was to be used for school supplies, thereby intending to provide the girls with an incentive to perform well in school (Kremer et al., 2009).

Household level interventions

We define education interventions taking place at the household level as those initiatives aiming to reduce or remove financial household level barriers to education as well as programmes providing incentives and motivation for households to invest time and resources in the education of their children. These programmes can be delivered by governments, non-governmental organisations, religious organisations or international

organisations. The education interventions implemented at this level typically fall under the following categories as outlined below.

1. *Interventions reducing costs:* Cash transfers are typically divided into Unconditional Cash Transfers (UCTs) and Conditional Cash Transfers (CCTs). UCTs provide small cash sums to households to increase their income and the cash transfer is not conditional on any particular behaviour, such as school enrolment or attendance (Baird et al., 2013). CCTs, on the other hand, provide cash sums to households conditional on certain behaviours, such as attending school. The increased household income is supposed to reduce prohibitive costs and any potential benefit to parents of sending their children to work rather than to school.
2. *Interventions reducing costs:* Programmes providing scholarships and allowances to cover all or some of the costs associated with education, including school fees, uniforms and books. Scholarship programs can be addressed to all students to facilitate attendance in times of economic shocks, as in the case of Indonesia during the Asian financial crisis (Cameron, 2009). It is common for scholarships to be targeted at groups of students at risk of non-enrolment or drop out, such as lower income students in the case of Cambodia (Filmer and Schady, 2009), or girls in the case of Western Kenya (Friedman et al., 2011).
3. *Interventions reducing costs:* Programmes reducing or eliminating school user fees to improve access to schooling. Direct user fees, including payments for tuition, uniforms, textbooks and parent-teacher association contributions are common in many LMICs (Morgan et al., 2012). Interventions to reduce or eliminate school user fees include removing all or some of these direct costs of schooling, for instance by providing school uniforms for free, or through the elimination of tuition fees, as has been done in many African countries over the last decades (Bentaouet-Kattan, 2006). Tuition fees may be universally removed, rolled out gradually or targeted towards particularly vulnerable groups (Morgan et al., 2012).
4. *Interventions providing information to parents* aim to improve schooling outcomes by changing parents' behaviour in some way. The information may detail the performance of children, for instance through the provision of report cards. It may also include information about the overall performance of the school so that parents may question the results and demand better performance from teachers. Dissemination of information about the economic benefits of schooling typically involves providing information to either parents or the students about the future potential returns to schooling.

Sharing concrete information about the economic benefits of staying in school enables parents and students to update their perceptions based on accurate data and change their behaviour accordingly (Nguyen, 2008; Jensen, 2010). For instance, a programme in rural Madagascar arranged parent-teacher meetings to give the families of grade 4 students

statistical information about the economic benefits of education. Some parents also met a role model, an educated person with high income from the local area, who shared their own personal experience of schooling and its impact on their lives (Nguyen, 2008). Other interventions aim to empower parents by enlightening them about their child's academic performance, and the quality of local schooling. For instance, the Learning and Education Achievement in Pakistan Schools (LEAP) Project gave parents two report cards in 112 randomly selected rural communities in Pakistan, one detailing their child's test scores and ranking compared to other children and the other ranking schools in each village by performance (Andrabi et al., 2009).

School level interventions

We define education interventions taking place at the school level as those initiatives aiming to improve the quality of the teaching and learning environment. They include interventions providing physical or human resource inputs, or that change how teaching is delivered, or how schools are managed. Typically a programme may include a combination of some or all of these components. These programmes can be delivered by governments, non-governmental organisations, religious organisations or international organisations. The education interventions implemented at this level typically fall under the following four categories as outlined below.

1. *Investing in teachers by employing, training and retaining teachers* can allow schools to reduce class sizes, improve the quality of instruction and offer more targeted tuition for children that are falling behind. For instance, the recruitment of local, untrained, teachers on fixed-term contracts (Kingdon et al., 2012) has become increasingly popular. In India, one intervention provided training for secondary school graduates to teach students in government schools who were lagging behind their peers in the core competencies (Banerjee et al., 2007). Contract teachers are typically paid at a lower rate than permanent teachers (Muralidharan & Sundararaman, 2013) and they may be hired by the national government, local government, NGOs or parent's associations (Kingdon et al., 2012).

Other interventions focus on training teachers to improve the quality of teaching. Such training interventions vary widely and include initial training for under-qualified or untrained teachers, general professional development training (in-service), subject-specific interventions focussing on pedagogy, subject-specific interventions focussing on ICT, or wider training programmes designed to inform all teachers about changes to the curriculum (Orr et al., 2013).

2. *Pedagogy interventions* include all those that aim to adapt or improve educational content or the methods by which it is taught. This includes interventions introducing curriculum reforms, innovative or specialised methods such as computer-assisted learning or multi-grade teaching. For instance, computer-assisted learning or use of other technologies in the classroom have been widely implemented as a means of

tailoring learning to students individual needs (Kremer et al., 2013). Interventions to introduce multi-grade teaching involve a shift in teaching philosophy, curriculum and materials to suit settings in which two or more grades are combined (Little, 2004).

3. *New schools & infrastructure interventions* typically include building a school in an area where there was not one previously, or rehabilitating existing facilities. This may also include providing access to clean water for drinking and washing, safe waste disposal and separate toilets for girls to remove health related barriers to schooling as well as tackle incidents of harassment and humiliation in school toilets (Birdthistle et al., 2011).
4. *Interventions providing materials* can assist teachers, facilitate learning and improve educational quality. We will include any intervention providing 'traditional hardware' material such as books, chalkboards, computers with appropriate software or other classroom equipment. For instance, the School Assistance Program (SAP) funded by the Dutch non-profit organisation International Christelijk Steunfonds (ICS), provided English, Maths and Science text books to primary school children in Kenya (Glewwe et al., 2009).

Institution level interventions

We define this category of interventions as those taking place at the community, local government or district/ state level. The interventions taking place at this level are primarily related to the management and financing of education. Because of the nature of these interventions, they are typically implemented by governments, although non-governmental organisations, religious organisations or international organisations may be involved in delivery. The education interventions implemented at this level typically fall under the following three categories as outlined below (drawing on Glewwe & Kremer, 2006):

1. *Interventions providing teacher incentives and promoting accountability* seek to improve the working conditions in schools so that teachers are motivated to come to work and improve their performance. Such interventions take many forms, such as providing direct payments to teachers based on their attendance or based on the achievement of their students (Glewwe et al., 2008). For instance, in a program in India, teachers were offered a cash bonus linked to their pupils' performance in independent tests (Muralidharan & Sundararaman, 2009), whereas in Kenya primary-school teachers were offered in-kind rewards based on pupils' exam scores (Glewwe et al., 2010). Alternatively, some interventions do not provide monetary incentives but infrastructural ones such as improvements to school facilities and classroom learning materials (Guerreo et al., 2012). Other interventions may use monitoring in order to keep track of teacher's performance. Such monitoring may be undertaken by school principles, external assessors, or community members (Guerreo et al., 2012).

2. *Decentralisation and local community participation interventions* have been implemented in response to perceived failures of centralised education systems. At the core of such initiatives is the decentralisation of decision-making authority to local levels and greater involvement of communities in making decisions and monitoring service providers. The intervention components of such interventions vary, but two commonly used modalities include school-based management and community monitoring, as outlined below.
 - a) *School-based management (SBM) interventions* involve de-centralising authority to the school level to improve the quality of school administration and leadership. SBM programmes may involve handing decision-making (for example, on budget, staffing and curriculum development) over to teachers, parents, students or other community members (Barrera-Osorio et al., 2009). For example, the School Management Initiative in Hong Kong gave school committees authority over staffing and devising the curriculum, as well as some financial matters, aiming to create greater flexibility in school finance, increase accountability, and encourage collaborative decision making (ibid). Committees may also devise school improvement plans and receive funds to finance implement these plans. The Education Quality Improvement Project in Cambodia encouraged school committees to identify their school's needs, suggest improvements and then carry out reforms using cash grants from the Ministry of Education (WDR, 2004). These types of intervention may also create greater school accountability to parents or the community, although they do not always include a participatory component.
 - b) *Community based monitoring and accountability interventions* seek to improve the representation of communities in which service providers, governments, or other public bodies operate (Westhorp et al., 2012). Interventions of this type are used in many sectors, including education, and aim to facilitate increased accountability between service providers and service users (ibid). An example of a community based monitoring intervention in the education sector is the use of a newspaper campaign to provide the public with information on education expenditure in Uganda (Reinikka & Svensson, 2004). In an effort to reduce corruption, the Ugandan government instigated the newspaper campaign, which published information on the amount of funds allocated to each district in both national and local newspapers. This allowed parents, head teachers and others, access to information about school grants in their area and to complain if amounts received by schools were incorrect or untimely.
3. *Public private partnerships and private provision of schooling* may seek to increase parents' and students' choice, provide supply of schooling when there is none, or improve the quality of education provided (Barrera-Osorio et al., 2009). Private schools may be run by profit, or by non-profit or faith based organisations and a range of

different mechanisms are implemented to facilitate access to private education and school choice for children from poorer households. For instance, school vouchers finance all or most of school tuition fees through payments made by the government, to a parent, or to a school chosen by the parent, and have been implemented in a range of countries, including Colombia (Morgan et al., 2013). In Pakistan, a program attempting to induce the creation of private schools was subsidised through a fellowship program for girls (Alderman et al., 2003).

The following interventions do not meet the inclusion criteria and will be excluded from the review:

- *Early childhood development:* While ECD is clearly an important part of education it is a separate sub-component of education and does not directly address primary and secondary education. Moreover, a team at the World Bank is currently working on a systematic review covering all ECD interventions.
- *Girls' sexual and reproductive health:* This is a separate sub-component of education. While important for girl's education, including such interventions would further add to the scope of the review as it would include a large literature on preventions of HIV and other STDs.
- *Distance education:* These interventions tend to be focused on further education and adult education and are less common for primary and secondary schools. Distance education can be seen as a separate sub-category of education and may be better reviewed on its own.
- *Special Educational Needs interventions:* The review is focusing on mainstream education and special education can be seen as a separate sub-component of education and is better dealt with in a review on its own.
- *Microcredit:* Microcredit interventions are not primarily about improving education and any impact on educational outcomes are likely to be indirect, through household income.
- *Roads and other community wide infrastructure:* These are not primarily about improving education, and any impact on educational outcomes may only be incidental.
- *Community wide health interventions:* We will not include community wide or general health interventions as education is not a primary outcome, and, if measured, educational outcomes are incidental.

Type of comparison

In order to answer question (1), we will include studies that compare students receiving an educational intervention with a control group that either receives no intervention or receives

a different form of educational intervention. Comparisons may be between schools, groups of students or areas such as school districts.

POPULATION

The review will include interventions targeted at primary school and secondary school¹ age children in low–and middle–income countries (LMICs), as defined by the World Bank, at the point in time that an intervention was carried out. All adult education interventions, including those that are university-based, will be excluded. We will also exclude studies from high income countries as the differences with LMICs, in terms of policy challenges, resources devoted to education systems, state capacity and broader contextual factors are such that we consider this evidence to be of limited applicability.

OUTCOMES

To be included studies need to assess at least one of the education related primary or secondary outcomes described below.

Primary outcomes: (1) enrolment: defined as the number of students registered for education at the start of primary/secondary education or a given grade year; (2) attendance: defined as a measure of the proportion of total school days for which enrolled students are present during the period in which a school is in session; (3) drop-out: defined as the number of children that enrolled in school but at some point in the year ceased to attend (UNESCO, 2005; USAID, 2011); (4) completion: defined as the number of students completing primary/secondary education or a given grade; (5): learning: defined as any measure of academic achievement or cognitive outcomes for students, whether based on test scores or other measures of skills and learning.

Secondary outcomes: any other education related secondary outcomes, including: (1) teacher attendance: defined as a measure of the proportion of total school days for which teachers are present; (2) teacher performance: defined as any measure of teachers' knowledge, practice, motivation or satisfaction (Orr et al., 2013).

We will also collect data on other secondary and intermediate outcomes, such as health status of children and child labour if this is reported in studies that satisfy all other inclusion criteria. Doing so will allow us to conduct a richer analysis along the causal chain from intermediate to final outcomes and to help address review question 2.

A broad range of outcome measures are used in the literature to assess outcomes across these categories and we will include any measures that fall in one of the broad categories

¹Since it is likely that different age ranges will attend primary and secondary school in different countries, we will apply national criteria from each relevant country as necessary, noting that in most countries this is 4/5+.

noted above. We will ensure that any outcomes included in a single meta-analysis are substantively similar.

STUDY DESIGNS

To address question 1 we will include studies that measure the effects of interventions using experimental and quasi-experimental study designs. Specifically, we will include: (1) Studies where participants are randomly assigned to treatment and comparison group; (2) Studies where assignment to treatment and comparison group is based on other known allocation rules, including a threshold on a continuous variable (regression discontinuity designs) or exogenous geographical variation in the treatment allocation (natural experiments); (3) Studies with non-random assignment to treatment and comparison group, provided they include pre-and post-test measures of the outcome variables of interest to ensure equity between groups on the baseline measure, as well as use appropriate methods to control for selection bias and confounding, such as: statistical matching (for example, propensity score matching, or covariate matching), regression adjustment (for example, difference-in-differences, and single difference regression analysis, instrumental variables, and ‘Heckman’ selection models).

Finally, it may not be possible to evaluate the effects of some interventions of interest, such as nationwide policies to eliminate school fees, using comparison group designs. For such interventions we will include single group designs with temporaneous controls, provided there is a clearly defined point in time when the intervention occurred, data are collected at a minimum of three time points before and three time points after the intervention, and the study takes into account secular (trend) changes in the analysis, or re-analysis is possible (Effective Practice and Organisation of Care 2013).

Studies without random allocation to treatment and comparison group with only post-test measures of the outcome variables, and studies that do not use statistical methods to control for selection bias and confounding will be excluded. Studies that employ less than a six-period interrupted time series design or ignore secular trend changes will be excluded.

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ROLES AND RESPONSIBILITIES

- *Content:* All members of the review team have substantive expertise in a range of topics in international development. Birte Snilstveit, Martina Vojtkova and Daniel Phillips are authors of a systematic review of the evidence on a type of education for farmers, although no team member has previously published work on primary and secondary education. The team is supported by an advisory group of academics and policy makers with specific expertise in education.
- *Systematic review methods:* Phil Davies is the principal investigator of a number of systematic reviews and has long standing experience with systematic reviews and evidence based policy more broadly. He heads the Systematic Reviews Office of the International Initiative for Impact Evaluation (3ie), overseeing the systematic reviews programme of 3ie. Birte Snilstveit is the co-author of several systematic reviews, and one of the lead reviewers of a forthcoming Campbell review (Waddington et al., forthcoming). She is also an Editor of the International Development Coordinating Group and has provided peer review and methodological support to over 30 systematic review projects. Martina Vojtkova is a co-author of a forthcoming Campbell review (Waddington et al., forthcoming). She was also the Managing Editor for the International Development Coordinating Group and has provided peer review and methodological support to a number of systematic review projects. Daniel Phillips is also a co-author of a forthcoming Campbell review (Waddington et al., forthcoming). All staff members involved in the project have attended training in systematic review methods.
- *Statistical analysis:* Philip Davies is the principal investigator of a number of systematic reviews and has considerable experience conducting statistical analysis. Martina Vojtkova, Birte Snilstveit and Daniel Phillips are familiar with the methods of statistical analysis used in systematic reviews. The team will be supported by a statistician/ econometrician (TBC) with advanced expertise in meta-analysis of quasi-experimental studies, and network meta-analysis if applicable.
- *Information retrieval:* John Eyers is an information specialist with over 20 years experience. He has supported the development of search strategies for a large number of systematic reviews in the field of international development. Ami Bhavsar, Emma Gallagher, Daniel Phillips, Martina Vojtkova, Birte Snilstveit and Philip Davies all have experience with systematic searching as part of systematic reviews.

POTENTIAL CONFLICTS OF INTEREST

Several of the review authors (BS, EG, MV, JS) are involved with the International Development Coordination Group of the Campbell Collaboration. However, the IDCG editor for this review, Hugh Waddington, is not involved in the review and we have also recruited

an independent Managing Editor (Shari Krishnaratne). The review will be also independently assured by the IDCG's independent co-chair, Peter Tugwell.

FUNDING

The systematic review is funded by the International Initiative for Impact Evaluation (3ie). The team aims to deliver a final review by the end of this calendar year.

PRELIMINARY TIMEFRAME

- Date you plan to submit a draft protocol: 14th March 2014
 - Date you plan to submit a draft review: 30th September 2014
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DECLARATION

Authors' responsibilities

By completing this form, you accept responsibility for preparing, maintaining, and updating the review in accordance with Campbell Collaboration policy. The Coordinating Group will provide as much support as possible to assist with the preparation of the review.

A draft protocol must be submitted to the Coordinating Group within one year of title acceptance. If drafts are not submitted before the agreed deadlines, or if we are unable to contact you for an extended period, the Coordinating Group has the right to de-register the title or transfer the title to alternative authors. The Coordinating Group also has the right to de-register or transfer the title if it does not meet the standards of the Coordinating Group and/or the Campbell Collaboration.

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Publication in the Campbell Library

The support of the Coordinating Group in preparing your review is conditional upon your agreement to publish the protocol, finished review and subsequent updates in the Campbell Library. Concurrent publication in other journals is encouraged. However, a Campbell systematic review should be published either before, or at the same time as, its publication in other journals. Authors should not publish Campbell reviews in journals before they are ready for publication in the Campbell Library. Authors should remember to include a statement mentioning the published Campbell review in any non-Campbell publications of the review.

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Birte Smits-Wouda