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The role of evidence in the improvement of school systems

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Introduction

Efficiency and equity have always been defining features of effective education policy in action. The global pandemic has further accentuated the importance of these themes. There is consensus among the global education community that the pre-Covid-19 learning crisis[1] and the extent of learning poverty[2] have deepened because of prolonged school closure. Prolonged lockdowns in many parts of the world have had a negative economic impact and funding constraints are placing strain on investment in education. The increased severity of the learning crisis coupled with new resourcing constraints make building back better an even greater challenge. The need for efficient and equitable spending which leads to good results is more important than ever.

In economic terms, efficiency is concerned with ensuring the highest possible levels of output for a given level of input. With finite financial resources in the context of education policy, there is always a need for education ministers to be preoccupied with efficiency and value for money. When considering spending decisions and funded interventions, there should be a focus on steps needed to maximise the educational return on investment as measured by learning outcomes and other benefits to students and society.

During the pandemic emergency, disadvantaged groups, including girls, have been hardest hit by remote learning shifts. Both the moral and the economic benefits of equity should not be underestimated. It is important to remember that using resources in an inequitable way is not efficient. Failing to equip disadvantaged students with foundational skills both damages their life chances and constrains economic development and societal wellbeing. It is efficient to be equitable. We know that investing in girls' education, for example, can yield huge economic and social returns.[3] The poor targeting of resources leads to wastage and the potential exacerbation of educational inequities.

The linkage between equity and efficiency is often evident in approaches to funding and resource deployment or distribution. It is not efficient to concentrate the most qualified and capable teachers in schools serving more advantaged communities. But if these higher-skilled teachers are deployed more evenly, they can be used not only to support more disadvantaged learners but also to support the professional development of other teachers, thus optimising their use. Smart targeting of resources to where they can do the greatest good is desirable, strategic and efficient.

Efficient use of resources depends upon many factors. There are many forms of efficiency and inefficiency, but one key efficiency variable is the extent to which activities which require funding are designed and implemented in a way that is informed by relevant evidence.

The application of insights about 'what works', derived from robust research, combined with evidence about context and real-time system data have, when taken together, the potential to add substantial value to 'building back better' after Covid-19. Evidence is the fuel that drives smart, adaptive, impactful policy. At its best, the combination of knowing what the most effective investments are and having great system intelligence[4] that tells you how things are translating into action and change, will enable policy and decision-making to be strategic, open to fine tuning and deeply contextualised.

[1] World Bank (2018)

[2] World Bank (2019)

[3] Sperling, Winthrop & Kwauk (2015)

[4] Riggall et al (forthcoming)

How should governments use **evidence** when making **investment decisions**?

Evidence-driven education reform is difficult. It can be hard to access relevant research and, compared to other sectors such as health, there is often a paucity of good quality research-based evidence that can be used to guide action. And when robust evidence has been generated in one country, there are often questions about how far the insights can be applied in the distinctive context of another country. Evidence comes in different forms. Senior officials need to know relevant research-based insights, but they also need easy access to other forms of evidence, including data about student outcomes disaggregated in terms of factors such as gender, geography, ethnicity, disability and family poverty levels. Policy should be responsive to 'user voice' and the perceptions and concerns of students and parents constitute, therefore, an important form of evidence.

There is an increasingly mature body of thinking about how we can encourage evidence uptake and knowledge mobilisation.[1] The demand for evidence (and the stimulation of demand through communications) are just as important as the supply of good quality evidence.

Developing an evidence culture takes time. There is a need to identify concrete and manageable short-term priorities to improve the availability and use of evidence while setting ambitious long-term goals and plans in motion to build an evidence eco-system that will support long-term education improvement plans nationally and regionally. A systemic approach is needed that takes a broad view of evidence. Research that has been replicated in different contexts using experimental methods at scale constitutes the evidence 'gold standard' when considering the efficacy of different methods. However, there is also a place for rigorous qualitative research particularly when seeking to diagnose a problem. As the Building Evidence in Education group recently stated:

> ***'When researchers want to know 'what works', quantitative methods are commonly selected instead of qualitative methods. However, without good qualitative data to contextualise these findings, 'how or why things work' can often remain obscured.'***[2]

[1] Hinton, Bronwin & Savage (2018)

[2] DeJaeghere et al. (2020)

In addition to good quality quantitative and qualitative social science research, we should also encourage policymakers and practitioners to use other forms of non-academic evidence, including (for example) findings from school inspectors, trends apparent from national test results, and data from student voice surveys. There is a place for other forms of enquiry, such as rapid reviews of policy and practice based on the analysis of planning documentation.[3] Our own recent work[4] suggests that to make the business of policymaking and implementation more evidence-informed, one needs a combination of evidence sources and wide view of what counts as evidence.

We need to build ecosystems of evidence, recognising the importance of different forms of evidence. We also need to build the capacity to use evidence at every level of each education system so that different actors – headteachers, district officials and ministry HQ staff – are all skilled at the analysis of evidence and take appropriate action based on the available evidence.

We identify five key actions needed for an effective evidence-driven approach to education reform.

FIGURE 1: Five components of an effective evidence-driven approach to education reform

Ensure your data systems provide disaggregated data and insight about student outcomes and resource distribution

Use the available evidence about what works and engage in the drive to build more of the right kind of evidence that is relevant to you

Align global insight about what works with local contextual evidence and need

Mediate evidence-based insights for policy professionals and frontline staff

Create collaborative spaces in which professionals at all levels can engage with evidence and reflect on practice – these can be linked to specific improvement agendas – for example, girls' education

This view of the desirable components or actions is not a theoretical construct. All of these components already exist in different forms and different places. All are essential and they are all interrelated.

In the following section, we exemplify the components with concrete case studies.

[3] For example, work commissioned and published by EdTech Hub since April 2020 has built knowledge of this kind.

[4] Gibbs, Thomas & Lucas (forthcoming)

Ensure your **data systems** provide disaggregated data and insight about **student outcomes** and **resource distribution**

Almost every country has an Educational Management Information System (EMIS) and a linked national system for student assessment. GPE have rightly emphasised the relevance of the right approach to 'big data' in the management of investments in educational improvement.[1]

Data captured by EMIS provides policymakers with a form of evidence that should sit alongside research-based insights when spending decisions are made. Granular data about students and about resource distribution is a powerful tool. It can be used in many ways that are relevant to GPE:

- to target resources and professional development where need is great
- to assist with accountability and improvement by identifying low-performing and high-performing schools and districts
- to monitor the success of projects and interventions and support adaptive implementation so that methods can be modified in response to the analysis of real time data
- to track the experience and outcomes of vulnerable groups of students, including girls.

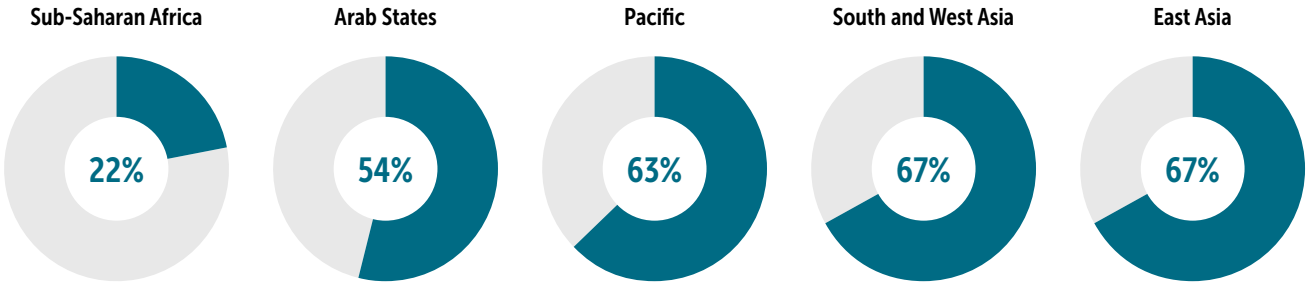
Evidence from data can be used in conjunction with evidence from research. If the data shows low enrolment rates for girls in a particular district, a rigorous qualitative social science enquiry can be used to reveal the reasons, according to out-of-school girls and their families, for non-attendance.

Technology has an important role to play in data management and some systems are still overly reliant on data transfer through inefficient use of paper-based reporting. Some systems lack the ability to report at student level because there is no system of unique student identifiers within their EMIS.[2] As a result, it is much more difficult to track the possibly differential experience of girls and boys.

[1] Irving & Mitra (2019); GPE (2019a); GPE (2019b)

[2] UNESCO-UIS (2020)

FIGURE 2: Countries using student-level data within EMIS[3]



[3] Ibid.

CASE STUDY: Building big data systems that help improve learning

Sierra Leone's Education Data Hub

Since 2019, the government of Sierra Leone has been building an Education Data Hub, available online. This 'flagship free quality education program relies on accurate data, state-of-the-art analytics and near real-time decision support tools'. It combines and connects the Annual School Census and National Examination Results.[4] It is an ambitious and radically new tool. Previously, there was no online sharing of official education data.[5] It is an example of large-scale, national data systems that are being designed to support decision-making but also to provide accessible system intelligence for wider public use. Still in development, it provides an excellent learning opportunity too. The recent EdTech Hub-funded review of the Data Hub not only celebrates its purpose, ambition and development, but also identifies potential risks for others who are keen to embark on such a project. For example, technological considerations regarding access on different devices and the need for the data that sits within it to be kept up to date are two top requirements for the tool to continue to be useful and fulfil its purpose. The EdTech Hub report also highlights the requirement for data transparency and detail to enable trust and disaggregation.[6]

[4] Government of Sierra Leone (2017)

[5] EdTech Hub (2020)

[6] Freiermuth et al. (2020)

CASE STUDY: Nepal equity index[7]

Nepal upgraded its EMIS to a web-based system in 2018, with unique school codes. Using this system, together with population census data, it was able to develop a composite educational equity index, based on indicators of access, retention and learning. The index covers equity dimensions of gender, location, caste and disability. The equity index is used, together with data on the distribution of education resources, to inform national and local level planning and budgeting in several ways:

- To identify districts and municipalities in need of targeted support
- To identify the drivers of inequity to inform policymaking (i.e. which groups of learners need additional support).
- To identify municipalities that have poor outcomes and equity but higher-than-average resources and that therefore need more guidance and monitoring.

[7] Ministry of Education, Science and Technology in Nepal (2019)

Use the **available evidence** about what works and engage in the drive to build more of the right kind of evidence, **relevant to you**

Although education is playing 'catch up' compared with health, there has been a great increase in the use of rigorous randomised control trials (RCT) studies in education in recent decades. One report identified over 1000 published RCT studies in education conducted 1980-2016.1 This expansion in quantitative research has, in turn, stimulated the development of meta-analyses that synthesise findings from studies considered to be methodologically sound. Research-based findings are becoming much more secure in two important areas: pedagogical techniques associated with good cognitive outcomes and aspects of neuroscience relevant to the work of schoolteachers.

[1] Connolly, Keenan & Urbanska (2018)

CASE STUDY: Identifying 'smart buys' based on rigorous evidence review

In October 2020, an international partnership known as the Global Education Evidence Advisory Panel (GEEAP) launched a paper examining cost-effective approaches relevant to the improvement of global learning and promoting the concept of 'smart buys': wise, evidence-based spending decisions.[2] This GEEAP report is based on the urgent need to know how to invest more efficiently to promote learning for all children. It is based on high-quality (where available) evidence that can comment on impact on learning and cost effectiveness. Findings are presented under four categories – great buys (cost-effective and supported by strong evidence base); good buys (good evidence that interventions are cost-effective); promising and low-evidence (small but rigorous studies that indicate cost-effectiveness, but overall evidence is limited); and bad buys (strong evidence that interventions have not worked and are not cost-effective).

[2] Global Education Evidence Advisory Panel (2020)

The concept of 'smart buys' is clearly relevant to those responsible for education budgets. Policymakers have a duty to be guided when making spending decisions by relevant evidence and it is irresponsible to invest in 'bad buys', even when there might be pressure from some interest groups to make 'bad buys' a spending priority.

The work of GEEAP is an important step in the right direction, but there is much more to be done at global and national levels to strengthen the knowledge base. Too much of the global literature is derived from high-income country contexts. We need more rigorous research undertaken by Global South research organisations in low-income and middle-income countries.

It is also important to acknowledge that there are other types of reliable and relevant forms of evidence that can support spending decisions, even where the 'best buys' are yet to be identified. For example, in the field of girls' education, we know that girl-focused approaches can be effective for the most marginalised and we know a great deal about the issues and challenges that may prevent access and completion of schooling. We know that the most marginalised girls are unlikely to be enrolled in school and will not be reached by interventions to improve school quality. Most out-of-school girls live in crisis-affected countries, and gender inequality in education tends to be greater in crisis-affected communities. Only 27% of refugee girls attend secondary school, compared to 36% of refugee boys; only 13% of girls living in the Lake Chad basin complete lower secondary school, compared to 20% of boys.[3] Even in more stable contexts, groups of girls get left behind: girls with disabilities, young mothers, victims of child marriage, and girls from remote communities.

Evidence suggests that governments should consider where girl-focused interventions are needed to ensure that all girls are able to participate in schooling and learn. Research we have conducted with FCDO, EdTech Hub and INEE suggests this might include:

- **Clear communications to schools and communities to ensure that pregnant girls and young mothers are supported to continue learning** (see for example, Sierra Leone and Kenya's response to ensuring that girls who have fallen pregnant during school closures are able to return to school)[4]
- **Safe spaces where girls can learn together.** Girl-only spaces can support girls' learning in emergencies.[5] Research in Kenya found that girls who attended community-based reading camps, or listened to radio lessons in groups during Covid-related school closure had higher learning levels than those that engaged in learning activities by themselves (using paper-based materials and/or radio and television lessons)[6]
- **Coordination with other community-level services** (for example, child protection and health) to follow up on cases of out of school girls at the household level.

Our work acknowledges the importance of the role of evidence brokerage, school leaders and the teacher workforce, gender-sensitive pedagogy, community coalitions, the home and family and a broad systems approach to diagnosing challenges and designing solutions.

[3] INEE (2021)

[4] See Page & Naylor (2021)

[5] INEE (2021)

[6] Amenya et al. (2021)

Align global insight about what works with local contextual evidence and need

Simply taking insights from global research and attempting to apply this evidence is unlikely to work. Interventions require contextualisation and modification in the light of evidence at the level of the system. There is a need to design interventions that combine global insights with an understanding of the local situation, including information relating to potential context-specific barriers and risks to successful implementation. This fusion of global and local evidence was promoted by GEEAP.

To be used effectively, therefore, this guidance should be combined with an assessment of context-specific needs and implementation constraints, including context-specific mechanisms, the quality of implementation, and political-economy constraints.[1]

Contextualisation goes beyond the design of interventions. If it is possible, interventions should be piloted so that modifications can be made based on evidence from the pilot. Similarly, implementation should be adaptive with changes made in response to issues that are identified during rollout.

[1] Global Education Evidence Advisory Panel (2020: 9)

CASE STUDY: Applying and contextualising global insights in Rwanda

To date, the Global Education Evidence Advisory Panel has identified only one 'great buy': the practice of giving information to parents about the benefits, costs and quality of education. An example of how this 'great buy' has been used in practice to get girls to return to school in Rwanda after Covid-19 comes from Education Development Trust's UK-Aid funded Building Learning Foundations programme.[2] Rwanda was the first country to be approved for GPE funding. The Ministry's Covid-19 response plan included a focus on girls' education and identified the specific challenge of drop-out caused by school closure. Initially, evidence was used to understand the barriers to returning to school after a crisis that required the closure of education establishments. Secondly, data was collected about which children were most vulnerable to drop-out and not returning to school, with the involvement of community committees. Then, building on the 'great buy' knowledge, information about the value of returning to school was shared through the school and community committees with families and parents. Finally, system data about enrolment was used to monitor the impact of the approach. The outcome identified through national data shows that between 85% and 91% of girls in P1-5 returned when schools reopened. This compares to between 77% and 88% of boys.

[2] Taken from the Education Development Trust's UKAid funded Building Learning Foundations Programme, Rwanda; full case study in Page & Naylor (2021)

CASE STUDY: Feedback from the frontline in Vietnam

Young Lives data indicates that students in primary schools in Vietnam achieve good outcomes in foundational skills in comparison with other countries.[3] One study of the Vietnamese system suggests that policymakers in that country have successfully combined insights from global research with deep contextual knowledge. In recent years, reforms have been introduced based on global research relating to pedagogical practices, such as the use of diagnostic and formative assessment rather than numerical grades. District- and provincial-level officials see it as their role both to explain evidence-based reforms to schools but also to listen to concerns from school staff about the practicalities of implementation, so that the central ministry is well informed and can, when necessary, make modifications to the roll-out of the reforms.[4]

[3] Boyden (2013)

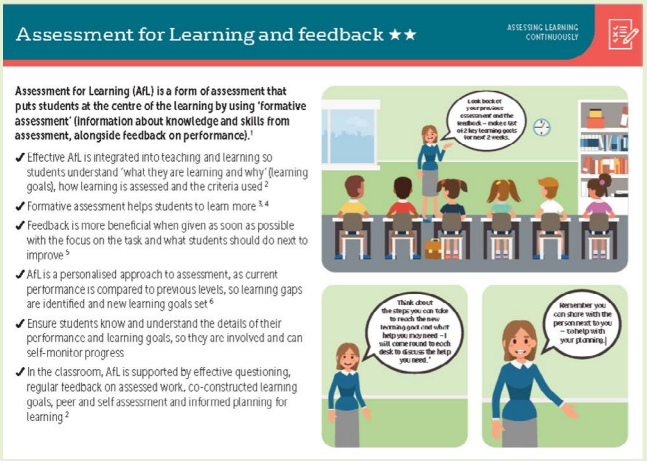
[4] McAleavy, Ha and Fitzpatrick (2018)

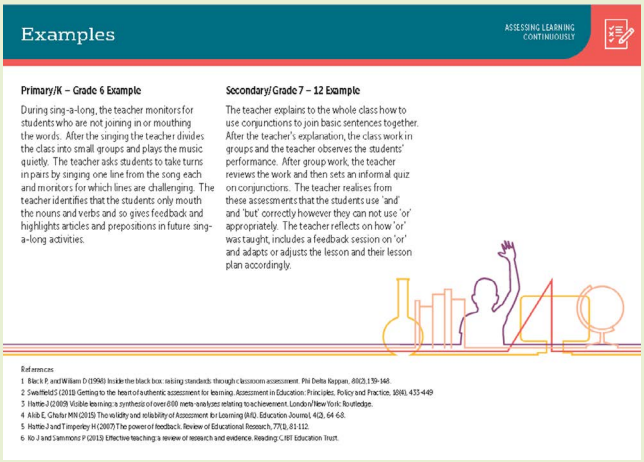
Mediate evidence-based insights for policy professionals and frontline staff

Policymakers and school staff are busy people who do not, for the most part, have the time to immerse themselves in the academic literature of educational research. Insights derived from research need to be summarised and communicated in a user-friendly way, with an emphasis on how findings can be translated into action. Education professionals may also need to be persuaded of the merits of new evidence-based methods if this requires them to abandon aspects of existing practice. Often reforms are quietly resisted by those who see no reason to change. Training, therefore, can play an important role in building both the skill and the will needed for the successful adoption of new methods.

CASE STUDY: Helping professionals in Jordan and Lebanon to visualise evidence-based insights

In both Jordan and Lebanon, Education Development Trust has been helping school improvement advisers to understand and apply insights from robust educational research. The advisers have access to a bank of 'clinical practice cards' which explain research findings in a highly visual and practical way, translating evidence into suggested practice. The cards cover findings from the academic literature relating to both teaching effectiveness and educational neuroscience. For example, the figures below show the cards explaining the principles of Assessment for Learning and how they can be applied in the classroom.





Create collaborative spaces in which professionals at all levels can engage with evidence and reflect on practice

Introducing evidence-based reforms to improve educational outcomes is an exercise in change management. Adoption and effective implementation of proposed changes are unlikely to happen simply because the changes have been formally agreed or mandated. Professionals at all levels of the education system benefit from opportunities to discuss the challenges of change with peers in a supportive, collaborative setting. In the country examples given above, professionals were often given a forum for professional dialogue and problem-solving. In Rwanda, communities of practice existed at school level and headteachers were part of a community of practice at community level. These networks were used as a place in which the plans for ensuring that girls returned to school post-pandemic were discussed. Similarly, in Vietnam, reforms to the assessment system based on international research were discussed within the collaborative 'subject groups' of teachers that exist in all Vietnamese schools.

The following case study shows how the same idea of how collaborative problem-solving engagement, prompted by evidence and a formal requirement to act, can lead to real change.

CASE STUDY: Helping 'out-of-school' students in South East Asia

Several research studies, especially studies conducted by UNICEF, convinced policymakers in several South East Asian countries that there was an urgent need to tackle the problem of Out-of-School Children and Youth (OOSCY). They decided to address this collectively, under the aegis of ASEAN, and signed a joint declaration in 2016. Further evidence-based insights were provided by UNESCO Bangkok, based on research into effective policies and programmes and an analysis of the economic implications of OOSCY. This evidence was sought to support decision-making and design change programmes that had at their heart a collaborative problem-solving partnership with members from different ASEAN countries which were committed to rapid progress in ensuring school enrolment. The Asia Regional Network on Out of School Children was established as a platform to disseminate knowledge and deliver capacity-building activities for country governments and NGOs, including networking events, workshops and one regional summit to showcase innovative programmes on OOSCY. Their report, 'Leveraging regional collaboration to enhance impact'[1] documents an impressive story of evidence prompting commitment to act and leading to collaborative problem-solving and change.

[1] Education Above All, Education a Child & Results for Development (2020)

Conclusion

In this paper, we have argued for the necessity of evidence-informed educational leadership. Educational decisions determine life chances and are too important to be left to chance. The magnitude of today's learning crisis is great and requires a highly professional response. We see evidence as the 'fuel' that can power effective action. Evidence comes in many different forms and mature education systems recognise the value of a range of evidence types, including academic research, disaggregated data from the frontline and student voice. Worldwide, the students who are least likely to go to school and unlikely to excel at school are those who have disadvantaged backgrounds. Access to the right types of evidence is necessary but not sufficient as a means of tackling the equity challenge. Education systems will continue to fail vulnerable students unless leaders at all levels have the skill and the will to make good use of evidence.

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