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EDUCATION

Go innovate!

A guide to successful innovation
for education

June 2016

Contents

Acronyms

CEI	Center for Education Innovation
CEW	Community Education Worker
CPD	Continuing Professional Development
CSO	Civil Society Organisation
DEEPEN	Developing Effective Private Education Nigeria
DFAT	Department of Foreign Affairs and Trade (Australia)
DFID	UK Department for International Development
ECCD	Early Childhood Care and Development
EIA	English in Action
ELMI	Emergent Literacy and Maths Initiative
EMIS	Education Management Information System
ESSP	Rwanda's Education Sector Strategic Plan
ESSPIN	Education Sector Support Programme in Nigeria
EQUIP-Tanzania	Education Quality Improvement Programme - Tanzania
GESS	Girls' Education South Sudan
HfI	Hub for Innovation
ICTs	Information and Communications Technologies
IQTE	Islamiyya, Qur'anic and Tsangaya Education
IfE	Innovation for Education (Fund)
ISD	Integrated School Development
LaST	Improving Learning Outcomes through Language Supportive Textbooks and Pedagogy
LGEA	Local Government Education Authority
MINEDUC	Ministry of Education, Rwanda
M4P	Making Markets Work for the Poor
NGO	Non-Government Organisation
NSAMS	Nigeria School Attendance Monitoring System
OECD	Organisation for Economic Cooperation and Development
PTA	Parent Teacher Association
P4R	Programme for Results
SBMC	School Based Management Committee
SEOs	Sector Education Officers
SIDA	Swedish International Development Cooperation Agency
SMC	School Management Committee
STEM	Strengthening Teacher Effectiveness through Mentoring
TDP	Teacher Development Programme
TSLA	Teacher Self Learning Academy
T-TEL	Transforming Teacher Education and Learning
UN	United Nations
WEC	Ward Education Coordinator

Executive Summary

If 'necessity is the mother of invention', the education crisis in many developing countries calls for some fresh thinking about how to provide quality education for all children. It is debatable how radical education reform needs to be and there is plenty of opportunity to follow John Hattie's advice to build on existing best practice and "stop ignoring what we know and scale up success"[1]. But, there is also opportunity to be more disruptive, to reinvent schools and transform learning, with abundant examples from around the world of how change in education can be managed and children can learn in different ways.

"We take it to mean **new ideas and methodologies within the context of the initiative that is being proposed**. This might involve completely novel approaches or (proven) ideas and/or approaches taken from other contexts and adapted to the current context".

Cambridge Education

This paper offers insights into the current theory and practice of innovation for education. Drawing on Cambridge Education's programme experience across many cultures and contexts, it identifies the conditions that have led to successful outcomes when introducing or supporting innovative approaches for education.

Rationalising innovation for education – finding the middle ground

Cambridge Education identifies six stages of innovation from the generation of new solutions to defined problems, through their development and testing, then scale-up and wider adoption. Leadbeater and Wong's framework for innovation shows a continuum of innovation from improvements in current ways of working in schools, to the possibilities of reinventing schools, engaging the wider community to supplement what schools can offer, and possibly transforming learning beyond schools altogether.

However, opinions are divided. Some practitioners seek more disruptive innovation in education and propose radical change to stagnating and redundant education models and systems. Others see innovation as, at best, a sham and window dressing of steady progress and, at worst, damagingly destructive and needless change at the expense of the tried and tested.

Nonetheless, there is perhaps a middle ground. Even the most radical reformers recognise the merits of effective schools supported by wider society and understand that much innovation will be incremental and in familiar surroundings. Most practitioners would agree that while global education systems continue to fail millions of children, it is important to consider the possibility of adopting new approaches, even going beyond conventional school systems, and to be prepared to manage the risks of change.

[1] J Hattie, 2015, What Works Best in Education: The Politics of Collaborative Expertise, Pearson, London

Cambridge Education's experience – identifying the factors for successful innovation

Cambridge Education has decades of experience addressing intractable education sector problems by adopting innovative approaches. This paper draws most explicitly from our recent experience managing the UK aid/Ministry of Education (MINEDUC) Innovation for Education (IfE) initiative in Rwanda. However, Cambridge Education's broader experience across a large number of programmes not specifically labelled as 'innovation' programmes is also relevant to this review. This paper supplements learning from IfE with experience from other programmes we manage.

The factors or conditions for successful innovation might result in immediate contribution to improved learning outcomes or longer terms gains by way of better stakeholder knowledge, attitudes and practices. Lessons are examined at both the micro level – the school and its immediate environment – and macro level – systemic change in the wider education sector. Clearly, the factors for success are best established before innovative approaches are introduced.

Factors for successful innovation for education in schools and communities

- **Teachers' perceived relevance of the innovation** – innovative approaches at the school level worked best when educators realised the incentive to become involved, usually in making their job easier and improving their professional development.

- **Innovative use of ICTs integrated in to teaching and learning with clear incentives for adoption** – ICTs in the classroom have great potential and are seen to work best when complemented and guided by teachers, who remained central to any model of school improvement. Training and classroom materials made available on mobile platforms or via the internet have successfully engaged teachers and mentors in continuing professional development (CPD) activities. Simpler, cheaper hardware has made use of ICTs more cost effective.

- **Innovations in teacher training and practice enhanced by teachers' support networks** – peer supported learning within innovative CPD activities, and the creative combination of content delivery with practice-based reflections, improve the capacity for improvements to the quality of teaching. Improvements to teaching and learning were enhanced by promoting wider support networks including head teachers, school based mentors and district education office staff.

- **Engaging communities to enhance school performance** – informed community engagement can increase attendance, improve school performance and provide children with additional learning opportunities out of formal schooling.

Factors for successful innovation in education at the system level

- **Responsive policy and curriculum development to encourage innovation** – policy and curriculum frameworks must be flexible enough to allow and encourage the testing of new ideas and adoption of innovative approaches. Capacity for institutional development should be reflected in Ministry terms of employment and continuing professional development initiatives.

- **Broad leadership support for innovation** – leadership is vital and should inspire initiative and non-submissive behaviours and welcome diversity.

- **Create an enabling environment for innovation** – Ministry-level readiness for organisational and cultural change is a pre-requisite for innovation in education to flourish. New norms and behaviours must be established before innovation can be institutionalised.

- **The importance of brokering partnership to support innovative approaches** – capacity for innovation within the education sector is strengthened by interaction with multiple partners in a complex and dynamic innovation landscape. Networks of diverse partners encourage the development and diffusion of new ideas and the sharing of experience and information.

- **Attract sustainable funding for innovation** – government funding is vital for national adoption of innovations but can be significantly augmented by alternative funding streams, which may prove especially vital to cover the risks in the incubation and initial scale-up of piloted ideas and secure prospects for long-term sustainability.

  - **Social entrepreneurs** can bring in a wealth of resources from their own organisations and beyond their immediate control, and provide an opportunity to respond quickly, build long term sustainability and create avenues for collaborations between multiple sectors.

  - The **low cost private school** market can be seen as leveraging complementary resources to the struggling state sector and Cambridge Education's experience in Lagos shows how an M4P approach can support the market without direct intervention.

  - **Direct funding for schools** offers a potentially more sustainable funding mechanism, making more effective and efficient use of scarce resources by giving schools greater autonomy, aligning education spending more closely to need, and reducing 'leakages' in the system.

- **The importance of being a learning organisation** – strong knowledge management is at the heart of innovation for education. Innovation must be informed by research and analysis of education sector priorities and rigorously monitored to allow for immediate adjustments and for tested approaches to be incorporated into evidence-based policy making. Internal and external strategic communications influence policy decisions, help change understanding and behaviours of education practitioners, and mobilise stakeholder support.

- **Recommendation: establish a dedicated innovation unit** – early establishment of a dedicated unit to drive innovation for education could manage the resources required, oversee knowledge management, forge links with innovation partners, and promote the institutionalisation of innovation across the sector. Ideally the unit would consist of a diverse team of collaborators with different expertise and experiences and be closely connected to education research, policy and planning – though not necessarily located within the Ministry.

Conclusion – go innovate!

While there is plenty of opportunity to build incrementally on existing best practice, the education crisis in many countries calls for fresh thinking about providing quality education for all children and the prospect of more transformative innovation strategies cannot be ignored. Establishing the factors and conditions for success is a necessary prerequisite for innovations in education to flourish.

If new ideas are to emerge and move beyond funded experimental pilots there must be appropriate engagement with multiple stakeholders and early investment in the systemic frameworks and organisational development required to develop an enabling environment for innovation. This is likely to require the formation of a dedicated innovation management unit. It will certainly need time and space for individuals and organisations to be creative and reflective without fear of failure, and thus be free to "go innovate!"

1   Introduction

This paper is intended for education practitioners and advisers with an interest in applying innovative approaches to education reform. It offers some insight in to the theory and practice of innovation for education and makes connections between the two.

Drawing on Cambridge Education's broad experience of education programme management for the UK Department for International Development (DFID), this paper provides evidence of innovations that have been introduced in different contexts as well as learning on how change was facilitated. It aspires to encourage creative solutions to achieving quality education for all children and identifies the conditions that might make innovative initiatives more successful and sustainable.

The paper begins with a reflection on current thinking about innovation in education from those convinced of the need for radical reform, and those less committed.

It then looks at Cambridge Education's experience managing both explicitly 'innovation for education' programmes as well as other programmes not tagged as 'innovation' but which are effectively introducing new ways of working in developing country education systems. This experience is used to draw practical lessons to guide future programme design and implementation – the focus here is on factors that contribute to the success (or failure) of innovative approaches, rather than the detail of individual innovations.

In considering success factors, the paper reflects on the roles of key players in the innovation process and the respective roles of state and non-state actors. The review looks at the micro level in and around schools, and also at the macro level of the wider education system. In considering more systemic factors, conditions that promote scale-up and sustainability of innovative approaches to education service delivery and a more enabling environment for innovation are also addressed.

About Cambridge Education

At Cambridge Education, we believe everyone has the right to a good education. Education creates better life chances for all and provides a route out of poverty. We work with and through governments to improve governance, education systems and service delivery – towards the ultimate goal of better learning outcomes.

www.camb-ed.com

2   Rationalising innovation for education

2.1   Defining innovation for education

As a starting point, what is innovation to the education practitioner and development manager? The following working definitions provide some points of reference for innovation in education:

"Simply put, innovation is **finding and applying new approaches to address existing problems** or serve unmet needs"

Adarsh Desai, World Bank Innovation Labs

"From a development perspective, an innovation is a **new solution with the transformative ability to accelerate impact**. Innovation can be fueled by science and technology, can entail improved ways of working with new and diverse partners, or can involve new social and business models or policy, creative financing mechanisms, or path-breaking improvement in delivering essential services and products. Innovation has been and will be pivotal for reaching sustained, scalable solutions to the world's complex problems"

WB/DFID/UNICEF/SIDA et al

"**Anything novel that adds value** to the end user"

Jonathon Wong, Head of Innovation Hub, DFID

"Innovation is the **creation and implementation of new or improved processes**, products, or services that result in significant improvements in learning outcomes, cost- efficiency or the quality of education"

DFID Rwanda

"We take it to mean **new ideas and methodologies within the context of the initiative that is being proposed**. This might involve completely novel approaches or (proven) ideas and/or approaches taken from other contexts and adapted to the current context"

Cambridge Education

Points to note in these definitions are that innovation:
• must achieve impact
• is clearly not all about technology
• can involve adaptation and improvement as well as the radically new
• may exist already and be transferred from one location to another.

The above points and the Cambridge Education definition, may seem like a compromise to allow for less radical, less risky and slower development. However, it is no less valid to allow for incremental change and stress the importance of different contexts. Something that is familiar and commonplace in one context, may be new and different in another. For example, when senior Rwanda Ministry of Education technocrats who gathered for a 'masterclass' seminar on innovation in Kigali in January 2015, there was a sense of relief that innovation could mean improving on what was already there and bringing incremental change in familiar surroundings.[2]

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[2] Innovation Unit for IfE, 13 Jan 2015, 'Masterclass for senior leaders in MINEDUC: Leading Innovation in Education', Kigali.

Samoff warns against assuming successful innovations can be readily adopted and adapted elsewhere, "Success depends on responsiveness to the local setting and strong local organization."[3] Langdon Winner, self-styled innovation critic, notes "you shouldn't start designing something until you have done at least several months getting to know the people, the situation and the real needs."[4]

2.2 Innovation for education – divided opinions and common ground

Innovation in education inspires mixed reactions from education practitioners. Many see 'innovation' as just a buzzword of little meaning to the real business of educating children: "so full of positive connotations that it affords an advantage to almost any claim made in its name."[5] The real danger is that, for some, innovation has become a panacea – a solution to every socio-economic problem with little examination of the problem itself. As sociologist Edward Shils put it "The mistake lay in regarding [innovation] as the only goal to be pursued."[6]

Innovation in education itself is nothing new. Back in 1835, in a talk delivered to the American Institute of Instruction, Hubard Winslow bemoaned that "Innovation seems to be the prevailing spirit of our age …" In many respects innovation is the essence of development and aid work – to progress and experiment with new and better ways of solving the seemingly intractable problems of poverty and denied opportunity. Development practitioners consider themselves agents of change but sometimes struggle with the process of change. In fact, Winslow was protesting the introduction of physical education and other progressive teaching practices, such as the adaptation of books or the use of teaching aids to make learning easier or more pleasurable – commonplace today. As Shopenhauer remarked: "All truth passes through three stages. First, it is ridiculed. Second, it is violently opposed. Third, it is accepted as being self-evident."[7]

Innovation remains high on the development agenda and donors including UK aid, United States Agency for International Development (USAID), the World Bank, United Nations (UN) agencies, Department of Foreign Affairs and Trade (DFAT), Swedish International Development Cooperation Agency (SIDA) and others continue to invest heavily in innovation funds and programmes.

Often these donor initiatives are responses to the continuing failure of education systems in the developing world to provide adequate opportunity to millions of children – witness the fact that in many countries the UN millennium development goals remain unmet after years of massive public and private funding. Faced with such intractable problems development practitioners are tempted, even impelled, to look for new opportunities, for fresh approaches. Advances in Information and Communications Technologies (ICTs) seem to provide new tools for old tasks and occasionally political pressures seem to open space for experimentation. However, a rational approach to innovation doesn't seek change for the sake of change nor does it accept the status quo – in this case the failed approaches of ineffective systems and interventions.

The rapidly changing post-industrial world needs post-industrial education systems to engage all young people and provide them with the necessary knowledge, skills, capabilities and values to survive and flourish in a less than certain future. The challenge is how to best make this happen in the shortest time and without the mistakes of the past? Although fear of change and fear of failure are almost synonymous with innovation, especially in more autocratic and hierarchical societies, a new reality for education in the 21st century must at least be considered.

[3] J Samoff et al, 2011, 'Going to Scale – Nurturing the Roots of Education Innovation in Africa', EdQual, Bristol
[4] Langdon Winner (Rensselaer Polytechnic Institute, New York), 2014, Q&A: How the ideology of innovation harms development. http://www.scidev.net/global/innovation/feature/langdon-winner-tyranny-new.html
[5] T Wood, July 2015, 'Two words to expunge from development speak and two we ought to use a lot more often' Development Policy Centre, Canberra http://devpolicy.org,
[6] Edward Shils, 1981, Imitation, University of Chicago Press, Chicago
[7] Cited in Valerie Hannon, 2009, 'Only Connect!': A new paradigm for learning innovation in the 21st century, Centre for Strategic Education, London

Disruptive innovation in informal learning is the ultimate goal for those who see not just different types of school but complete alternatives to school, without classrooms, teachers, timetables, or exams.

2.3   A framework for innovation in education

The varied concepts of innovation and the different strategies for innovation in learning are usefully illustrated in the following table from Leadbeater and Wong.

Figure 1: The Education Innovation Grid

	Formal Learning	**Informal Learning**
Sustainable Innovation	Improve	Supplement
Disruptive Innovation	Reinvent	Transform

Improve — schools through better facilities, teachers and leadership
Supplement — schools by working with families and communities
Reinvent — schools to create an education better fit for the times
Transform — learning by making it available in radically new ways

Source: C Leadbeater and A Wong, 2010, Learning from Extremes, Cisco Systems Inc., San Jose

The top left cell is most familiar and represents the bulk of investment in education around the world over the years. This **sustaining innovation in formal learning** strategy improves on the teaching and learning taking place in schools. To the right, **sustaining innovation in informal learning** recognises the role of families and communities to supplement the work of schools.

Radically progressive innovators look to the bottom row of the graphic for inspiration. The institutional norms of school are broken by those seeking to reinvent school with **disruptive innovation in formal learning** and challenges to the timetabling of lessons, organisation of classes, and the structure and delivery of teaching and learning to offer a different kind of school experience. **Disruptive innovation in informal learning** is the ultimate goal for those who see not just different types of school but complete alternatives to school, without classrooms, teachers, timetables, or exams. They see the possibility, if not necessity, to transform education into a very different personal experience with potentially no prescription.

Ultimately in the great innovation debate, there emerges a middle ground where compromise reigns.

2.4   An emerging middle ground

It is the concept of transformative, disruptive innovation for education where passions run highest. Leadbeater, Barber and Christensen, among others, call for a global whole-system revolution driven by entrepreneurial spirit in the social sectors, and taking full advantage of all that ICTs offer to provide quality education on a mass scale. Others are more conservative, such as Winner who negatively compares disruptive innovation to Schumpeter's 'creative destruction.'[8] He decries "the rather disrespectful and destructive focus on rushing into established domains of human activity and saying 'this has been around a long time, it needs to be disrupted and something new put in its place'" and fears the "tyranny of the new", which overrides much that is well tried, tested and still of great value.[9]

For many education practitioners, the reality lies somewhere between the two extremes. They continue to work to progressively improve schools and connect with communities, while remaining open to the potential for radical new approaches to education and willing to have their efforts complemented by others outside the system. And, despite their radical tag, reformers such as Leadbeater and Barber do still strongly support more 'conventional' developments within the school system. They promote better teaching, effective school leadership and community engagement associated with familiar 'integrated approach to school improvement' models, paired with improved curricula and assessment systems within strong governance frameworks. What they strongly advocate is the potential of thinking beyond just sustaining innovation or just improving the existing school system – they push us to go beyond current comfort zones and accept the greater risks and fears of failure inherent in innovation.

Ultimately in the great innovation debate, there emerges a middle ground where compromise reigns. So called 'disruptive innovators' aren't pushing for innovation for innovation's sake and the innovation sceptics are at least open to the potential of thinking outside the box when responding to the pressing needs of millions of modern learners.

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[8] Creative destruction refers to the incessant product and process innovation mechanism by which new production units replace outdated ones.
[9] Langdon Winner, op cit

3 Innovation in education in practice – learning from Cambridge Education

3.1 Cambridge Education's experience

Cambridge Education has decades of experience addressing intractable education sector problems by adopting innovative approaches from across Leadbeater and Wong's aforementioned spectrum of strategies.

Cambridge Education's experience of innovation for education comes most explicitly from our recent management of the UK aid/Ministry of Education (MINEDUC) Innovation for Education (IfE) initiative in Rwanda. In this paper, a number of lessons have been drawn from the 26 IfE grant funded innovation pilot projects in Rwanda that were implemented by a range of non-state actors supported by Cambridge Education as fund managers, with MINEDUC oversight.[10] IfE developed and tested new ideas but also concentrated on the process and conditions required for successful innovation. There are also lessons from the wider education sector in Rwanda, in part informed by the efforts to develop MINEDUC capacity to become the 'Hub for Innovation' (HfI) and the country's driving force for innovation in education.

However, Cambridge Education's broader experience across a large number of programmes not specifically labelled as 'innovation' programmes is also relevant to this review. This paper supplements learning from IfE with experience from other programmes we manage. Lessons are examined at both the micro – the school and its immediate environment – and macro level – the wider education sector.

This paper can only offer a few snapshots from the field. Whether these interventions are considered truly 'innovative' or simply the provision of sound solutions supported by strong project management may be debatable, but all the programmes offer insights into how innovation can be successfully managed.

3.1.1 Cambridge Education programmes offering innovation in education

The map on the following pages offers an overview of the Cambridge Education-managed programmes referenced in this paper which provide lessons for the successful introduction or scale-up of innovations. All the programmes listed are funded by UK aid.

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[10] See IfE, 2015, Learning from Innovation for Education in Rwanda, MINEDUC, Kigali. See also Center for Education Innovations for Rwanda IfE Project Summaries at http://www.educationinnovations.org/programs/search?combine=cambridge+education&field_lexternal_evaluation_value=All&field_countries_tid%5B%5D=464&sort_by=changed&sort_order=DESC&=Apply

Figure 2: Selected Cambridge Education programmes offering innovation in education

The Innovation for Education (IfE) Fund provided an opportunity to test new ideas to improve the quality of education in **Rwanda**. Between 2012-2015, civil society and the private sector were supported to pilot 26 innovative projects in classrooms, schools and other education institutions all over Rwanda. Each project ultimately aimed to provide evidence of effective and equitable ways of improving children's learning outcomes with the potential to be scaled up nation-wide. Over 6,000 teachers and 675,000 students were reached across all projects.

Teacher Development Programme (TDP) is improving the quality of teaching in primary and junior secondary schools and in Colleges of Education in six northern states of **Nigeria**. Between 2013-2019, TDP will improve the skills of 66,000 teachers. In turn, for every year they continue as teachers, they will improve the learning outcomes of over 2.3m students.

The four-year **Government of Ghana Transforming Teacher Education and Learning (T-TEL)** programme is supporting the implementation of the new policy framework for Pre-Tertiary Teacher Professional Development and Management. T-TEL seeks to transform the delivery of pre-service teacher education in **Ghana** by improving the quality of teaching and learning in relevant national bodies, institutions and all 40 Colleges of Education.
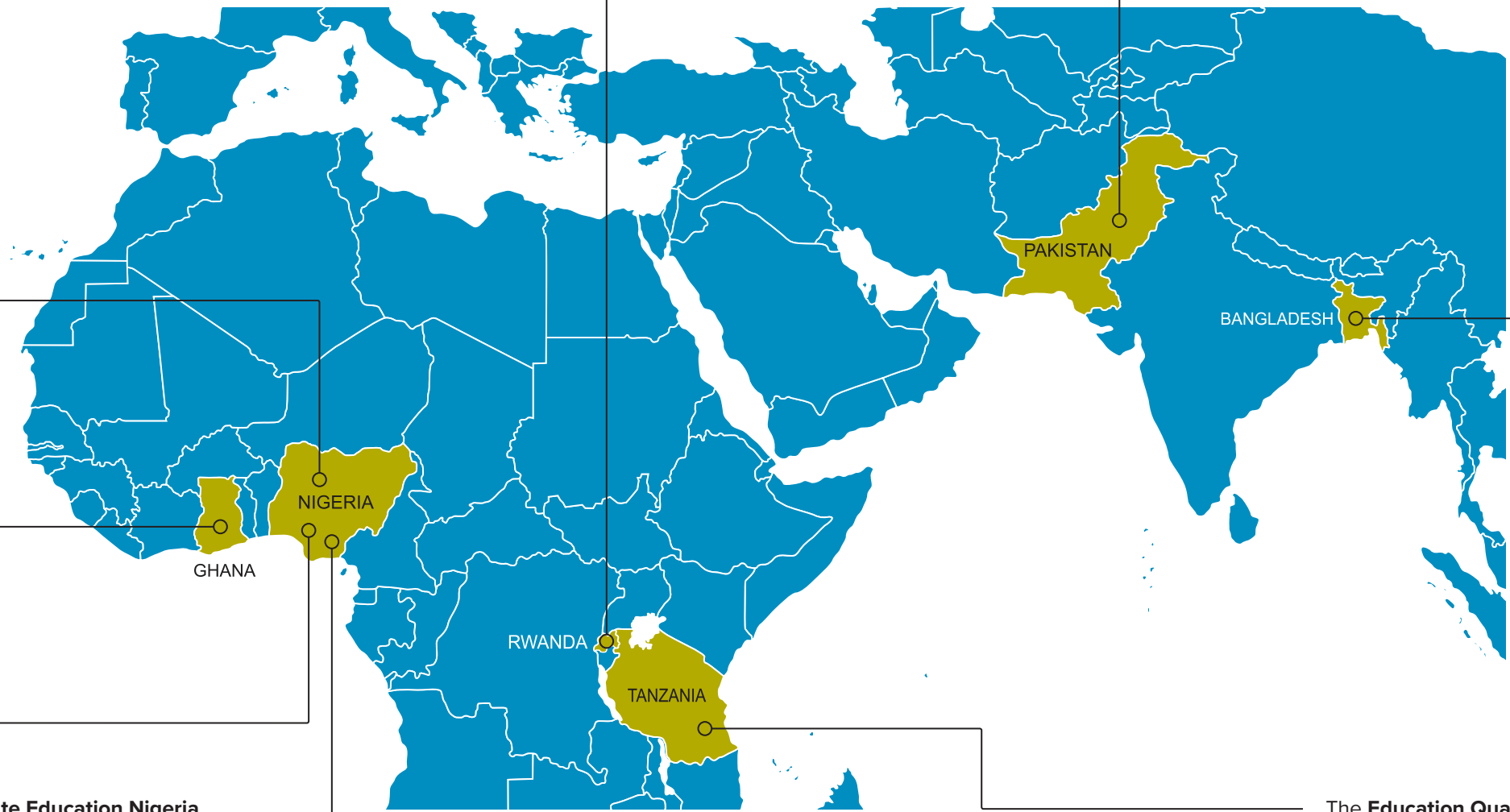
Developing Effective Private Education Nigeria (DEEPEN) in Lagos is the first education programme to use a Making Markets Work for the Poor (M4P) approach. DEEPEN will create a better regulatory environment for private schools, make financial products and quality school improvement services for schools more available, and improve access to relevant information for parents and education stakeholders. Improving the low cost private education market in Lagos will raise learning outcomes for 1.5m girls and boys in Lagos' private schools.

The **Pakistan Education Innovation Fund (Ilm Ideas 2)** provides a platform for the generation, piloting, and scale-up of innovative solutions that address critical education challenges in four broad thematic areas: Enrolment, Retention, Quality and Systems. Ilm Ideas 2 is focused on creating a balanced portfolio of 'education investments' with high potential to achieve scale and sustainability. Central to the investment portfolio-related design is working with partners for the identification, capacity building, implementation and financing of innovative education solutions.

English in Action (EIA) is helping Bangladeshis improve their English. Adult learners are targeted with innovative television programming and mobile phones become low-cost learning devices by calling a mobile short-code service – 28m people have used EIA media products. In schools, new English language teaching and learning activities for teachers and students include audio-visual resources available at low cost through SD cards on teachers' mobile phones; supporting print materials; and peer reflection. By 2017, EIA aims to reach 51,000 teachers and over 7m students.

The **Education Quality Improvement Programme in Tanzania (EQUIP-Tanzania)** supports the Government of Tanzania to improve the quality of primary education for more than 2m girls and boys in seven regions of Tanzania. These regions represent one quarter of the primary education system covering approximately 4,500 schools and 49,000 teachers. EQUIP-Tanzania is focused on improving teacher performance, school leadership, education planning and management, and increasing community participation.

Education Sector Support Programme in Nigeria (ESSPIN) supports federal and state governments to develop effective planning, financing and delivery systems that will improve the quality of schools, teaching and learning. By 2017, the eight-year programme will have had a significant impact on 16,000 public and non-government schools and approximately 4.7m learners.
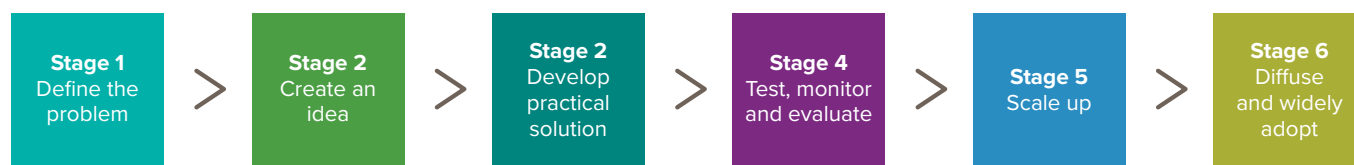
3.2   Stages of innovation

Cambridge Education takes a phased approach to the challenge of developing innovative solutions for education reform (See Figure 3 below). Identifying and testing innovations is part of a larger process, starting with careful consideration of the intended purpose of innovation and ending with the scaling up of successful innovations and their wider adoption. True success is only really achieved after the sixth stage (diffuse and widely adopt) has been reached and it is vital that this end goal is kept in sight from the beginning.

Joel Samoff notes the importance of "expectation to enlarge scale from the outset of the pilot"[11] and one of the recommendations from the 2014 Center for Education Innovation's (CEI) Education Social Enterprise Forum was that "implementation in the start-up phase should be directed by activities and systems that would be achievable when the product or service reaches scale."[12]

Figure 3: Stages of Innovation

| Stage 1 Define the problem | > | Stage 2 Create an idea | > | Stage 2 Develop practical solution | > | Stage 4 Test, monitor and evaluate | > | Stage 5 Scale up | > | Stage 6 Diffuse and widely adopt |

Source: Cambridge Education

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[11] J Samoff et all, 2011, 'Going to Scale' Nurturing the Roots of Education Innovation in Africa, EdQual, Bristol
[12] Center for Education Innovations, 2014, Education Social Enterprise Forum Report, Nairobi

4 Factors for success

The aim in this section is to indicate the breadth of Cambridge Education's experience in introducing innovative approaches with a focus on the **factors for success** instead of delving into the detail of individual projects or programmes themselves. The factors for success, sometimes referred to as conditions for success, are the features of the innovation or the innovation project that significantly enable or enhance its prospects of achieving positive outcomes. Ultimately, this is reflected in improved learning outcomes and sustainable impact on children's wellbeing.

The success factor may refer to a particular project approach or methodology resulting in lasting improvements in education stakeholders' knowledge, attitudes and practice, or it may refer to the manner in which resources have been deployed. It is often context specific.

Whether innovative approaches are introduced within or around schools or at the systems level, the implication is clearly that the factors or conditions for success are best established before innovations are introduced.

The first half of this section addresses factors at the micro level – in and around school – before expanding out to the macro level factors needed to create an enabling environment. Figure 4 below details both the micro and macro level factors for success identified through Cambridge Education's work.

Figure 4: Success factors
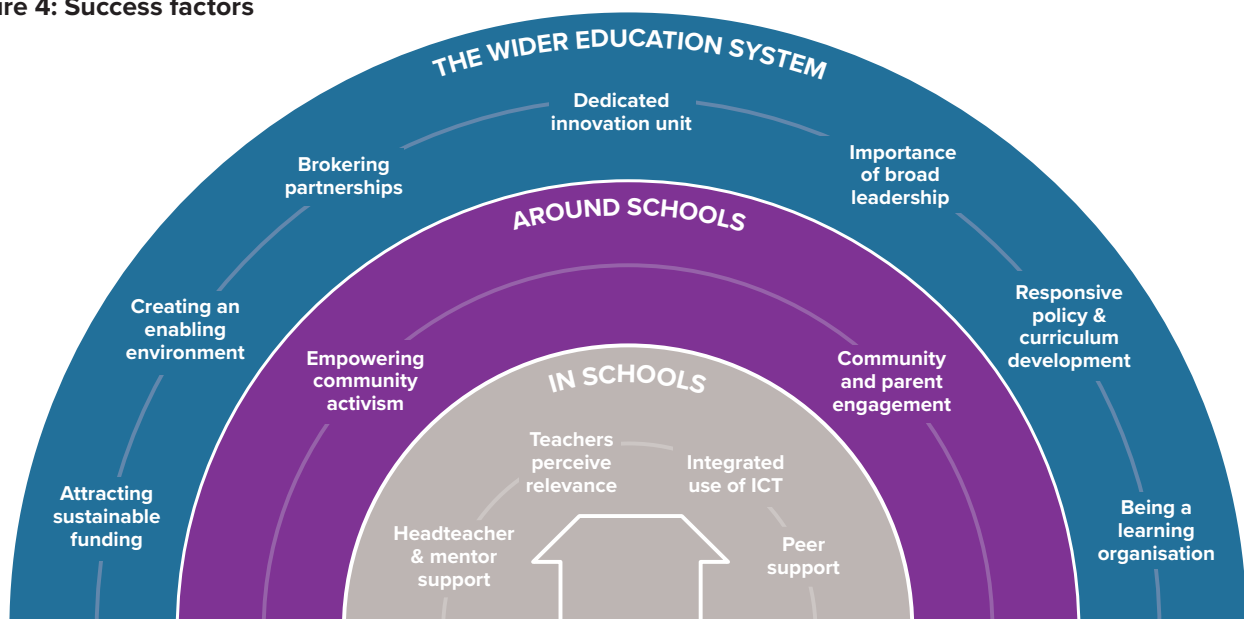
4.1 A note on determining success – learning from IfE

In most education programmes, the main direct or indirect determinant of success is usually learning outcomes and these are often narrowly defined and measured in terms of test score improvements. There is an expectation that these learning outcomes can be readily achieved and robustly assessed within the life of the project. The prospect of attracting future investment for scale-up is therefore often dependent on achieving this measure.

IfE experience revealed that the closer the innovation was to the time and place that teaching and learning were happening – i.e. in lessons, in schools – the better chance there was of recording successful learning outcomes. Of IfE's 'in-school' projects, the most positive results were from those with directly relevant tests, for example literacy tests to see improvements in reading because of more available fictional books under the **Rwandan Children's Book Initiative**. **Improving Learning Outcomes through Language Supportive Textbooks and Pedagogy** (LaST) supported learners to access textbook content and develop their English language. LaST was able to demonstrate learners at LaST schools performed significantly better than those at non-LaST schools by using specially designed language tests. **Emergent Literacy and Maths Initiative** (ELMI) in early childhood centres and parent groups saw positive learning outcomes for Literacy and Maths using bespoke tests to measure children's school readiness.

Other IfE projects sought 'intermediate outcomes' – steps on the way to improved learning outcomes. These outcomes could be improvements in the knowledge, attitudes and practice of stakeholders or efforts to embed systemic change. Such intermediate outcomes are expected to impact on learning outcomes over a longer period than the project. The piloting, testing and scaling of some of these new approaches is compromised if there is a necessity for education programmes to demonstrate short-term impact on learning outcomes. The diversity of innovations being tested within education programmes globally include some that intended to develop a broader range of critical thinking, collaboration, and problem solving lifeskills to face the social, economic and environmental challenges of the 21st century. This requires consideration of the view that "most current assessments measure the wrong things in the wrong way. Global assessment regimes must be reformed to... reward skill development as well as content knowledge."[13]

Towards the end of the IfE programme, Valerie Hannon of the UK-based Innovation Unit commented on the use of 'the wrong metrics' and recommended a broader perspective for measuring the outcomes of innovative approaches that reflected learning beyond the formal setting of the classroom. The more an innovation features in the bottom row of the Leadbeater/Wong grid, the more likely it will need to be measured by different metrics. Disruptive innovation for education organised on a different set of principles in a wider 'learning society' requires a fresh take on measuring what and how children learn.

4.2 Factors for successful innovation in and around schools

Drawing on experience on the IfE Rwanda programme and other Cambridge Education-managed programmes, this section looks at the factors that can help enable success at the micro level – in and around schools themselves.

4.2.1 Teachers' perceived relevance of the innovation

Schools are at the heart of any education system and are likely to remain central to children's learning despite more disruptive innovations gaining ground and becoming more credible. The introduction of innovative approaches at the school level has worked best when those educators involved have perceived the innovation's relevance to their work. Their acceptance of the innovation and their engagement with the process is usually manifested in their believing the innovation will make their work easier and that it may offer an opportunity for improving their professional development.

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[13] Richard Halkett et al, 2010, The Learning Society, Cisco Systems Inc., San Jose

Further, these positive factors were enhanced if the twin constraints of time and encroachment on the curriculum were also addressed, thereby allowing educators to deliver what was expected of them without apparently adding to their burden. IfE projects where these benefits were clearly demonstrable tended to find greater teacher and school leader engagement and allowance for the innovation to be incorporated into the school timetable.

Broadly speaking, projects which implemented something new in the classroom, but within the parameters of the existing curriculum, were well received by local stakeholders. For example, this was clearly shown in the IfE projects that supported the required use of English as the language of instruction for both teachers (**Strengthening Teacher Effectiveness through Mentoring (STEM)**) and learners (**Improving Learning Outcomes through Language Supportive Textbooks and Pedagogy**).

Teachers were shown to have very positive reactions to the innovations because they addressed an obvious challenge that many teachers were facing. **Improving the Quality of Education through Active Learning, Gasabo Whole School Development Programme** (similar in scope, if not scale, to ESSPIN's Integrated Approach to School Improvement[14]), and **Rwandan Children's Book Initiative** were also generally well regarded as offering new approaches in Rwanda for delivering the current curriculum. This is in keeping with the strategy of sustaining innovation in a formal setting to improve on work in schools.

Projects that were deemed extra-curricular and often requiring time to be spent outside of the school day were much less likely to receive full participation. Thus IfE projects that brought environmental issues to school through school gardens and related **Green School Initiatives**, or **Promoting spatial thinking in natural resource management through community mapping** struggled for buy-in because they were not seen as directly linked to in-classroom teaching. Yet, both could have been more strongly linked to the existing curriculum and justified their place in the timetable by complementing more 'traditional' science and arts subjects. Instead, they were seen as detracting from the real purpose of school.

4.2.2 Innovative use of ICTs integrated into teaching and learning

Innovative uses of ICT have great potential and work best when complementing and being guided by teachers' inputs. However, technology-based projects funded through IfE also received a mixed reception because it was not always immediately evident what incentives they offered.

Mentorship Community of Practice, which developed an online community of practice for senior school-based mentors[15], was well-received by the mentors because they saw it as time saving and providing an effective alternative to long transport trips to meet mentors face to face. Also, the **eTeacher Training College** showed that the majority of teacher trainers and teachers developed skills in the innovative use of technology in the classroom.

Raspberry Pi technology in Ghana

Globally, tutors and teachers now routinely use the internet to find useful resources for their own professional development, on top of what they learn in the classroom. In principle, Ghana's 40 Colleges of Education should all be connected to the internet, but in practice there are often obstacles. To make the most of limited connectivity, the T-TEL programme is providing colleges with a selection of educational resources using a low-cost computer: the Raspberry Pi.

Tutors and students in some colleges do already have access to a variety of low-cost devices, usually phones that can access the internet. However, most of the time this is done through the college WiFi network rather than by purchasing mobile internet which students cannot afford. The Raspberry Pi connects to the college WiFi network – or creates an independent WiFi network. This provides access to educational resources, such as materials for tutors and teachers, information from Wikipedia and of course T-TEL materials and publications whether or not the college has a functioning internet connection.

Developed at the University of Cambridge, and managed by the Raspberry Pi Foundation, the device is one of the most widely-used low-cost credit-card sized "single-board" computers. To our knowledge, this is the first time a UK aid-supported programme has used technology of this kind to deliver its international programmes.

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[14] ESSPIN supports key elements that combine to deliver quality education. Improving school performance through better educational management, teaching, school infrastructure and learning materials is combined with changes in governance structures and systems, and in the attitudes of parents and communities.
[15] The introduction of school-based mentors was a national Government of Rwanda scheme to support teachers

Some IfE projects reported that ICT was often seen as an extra-curricular or stand-alone activity by teachers and school leaders rather than a mechanism through which to deliver the curriculum. The use of audio-visual material broadcast on TV in **KnowZone Rwanda** took control of the curriculum and the class away from teachers with prescribed content at set times. The project worked better when pre-recorded packages were made available to be used as and when required. Teachers taking part in the **Teacher Self Learning Academy** found it difficult to find time to play back videos of their teaching and engage in reflection.

"Trainer in the Pocket"

English in Action (EIA) in Bangladesh and, more recently, the Teacher Development Programme (TDP) in northern Nigeria both take similar approaches to the Teacher Self Learning Academy (TSLA) in Rwanda by using context sensitive audio-visual training material on simple, accessible ICTs (mobile content known as 'trainer in the pocket') to supplement paired and peer-group training of teachers from clusters of local schools. In addition to having a personal guide, the teachers benefit from having training content that is undiluted or distorted by intermediaries, as in a cascade system. The evolution of all three projects shows a trend towards reliance on simpler, cheaper technology, i.e. moving from iPads, to smartphones, to simple phones, to SD cards, which offers the unit cost reductions and increased reach implicit in scale-up.

A further scale-up recommendation from **TSLA** was to limit the scale and scope of lesson/subject content to be produced for the mobile platforms to more generic, pedagogical methodologies. In all three projects the peer learning, supplemented by readily available hard-copy teaching guides and resources, was a significant value adding element.

Using low cost technology to teach English in Bangladesh

EIA's adult literacy component, 'Janala' (meaning 'window' in Bangla) harnessed the latest communications and multimedia technology to provide high-quality English learning tools, using mass-media platforms e.g. web, mobile, television and print media. Anyone can learn and practise English by calling a mobile short code (from any Bangladeshi mobile operator), for the cost of 50 paisa (half a penny) per minute. The project's reach increased further with the launch of educational television shows which have taken an accessible and entertaining approach to learning, and have increased the number of Janala users.

Janala has demonstrated considerable success in increasing adult literacy in English by adopting a transformative innovation strategy. Compared with the poor results from IfE's **Knowzone Rwanda**, it has succeeded **because** it is disruptive of traditional methodologies and learning takes place in an informal setting. Learners access the content and programmes when and where they want to, manage their own learning and assessment, and can come together in self-directed peer learning groups. It's demand driven and doesn't require a slot in a timetable, a room in a school, or a teacher for direction.

Ndi Hano! (Here I am!): Daily teacher and pupil attendance management using SMS reporting – the only IfE project that was not completed – encountered a number of technological errors which made the process more time consuming and discouraged participation in the project. Significantly, there was no clear incentive for teachers to change their practice and little feedback was available without the required data platform properly set-up. IfE's ICT initiatives sometimes struggled with the prerequisites of electricity and internet availability.

Teachers clearly remain central to any model of school improvement, regardless of how successfully ICTs can be introduced and operated. In schools, ICTs provide additional, powerful resources for teacher development and student learning, where technology "used alongside an active, motivating teacher… reinforces, extends and deepens students' learning opportunities."[16] As was suggested in an Economist article on the One Laptop, One Child initiative in Peru, it is critical that technology incorporates best practice pedagogy and is integrated systematically into the learning day.[17]

Outside school, ICTs offer great prospects for self-learning from the rich variety of online resources – and teachers are still at the heart of this. There is great need for structure, direction and feedback from "professional educators: understanding with precision how people learn, and how learning opportunities need to be designed to facilitate this process"[18], and so be able to facilitate the integration of learning from outside and inside schools. This might seem a long way from the reality of rural Africa or Asia but times are changing and affordable technology and connectivity are arriving fast, especially when supported by governments that place technology at the core of economic development.

4.2.3   Innovations in teacher training and practice

The biggest group of IfE projects were those centred on innovative approaches to teaching and learning with several focusing on bringing about changes in teacher behaviours and introducing new teaching methodologies, often introducing more inclusive education practices and more learner-centred methods. For example, qualitative findings from the TSLA showed ways in which professional development has shifted teacher behaviour through greater use of group work and the development of new and inexpensive teaching aids. There was measured change in the use of active learning methods and more activity-based learning in **Improving the Quality of Education through Active Learning in Rwanda**.

The more significant evidence from Cambridge Education programmes suggests that innovative approaches to teachers' Continuing Professional Development (CPD) are enhanced by working with their peers and other professionals. In IfE, teachers responded well to a blended approach to CPD which brought together some self-learning, possibly delivered in an accessible way through the medium of technology (e.g. mobile phones), and peer support.

While the content of the training was effectively delivered, in some projects it was clear that the wider support network for teachers, including fellow teachers, school-based mentors and head teachers, was more important for providing in-person feedback and encouragement. The findings from the **Improving Teacher Librarian Education in Rwanda Project**, for example, found that although the one-off training provided was highly evaluated, participants expressed the need for ongoing forms of mentoring.

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[16] Michael Barber et al, 2012, Oceans of Innovation, Institute for Public Policy Research, London
[17] The Economist, April 2012, A disappointing return from an investment in computing
[18] V Hannon, 2009, 'Only Connect!' op cit

Peer support

Embedding processes of peer-supported learning within professional development activities, and the creative combination of content delivery with practice-based reflections, can improve the capacity for innovative improvements to the quality of teaching. The findings from IfE support the wider concepts of 'learning organisations' and 'communities of practice', originally derived from the business sector, and complement the notion of innovation driven by effective teams of "individuals with diverse backgrounds and perspectives together around a shared mission and set of values... creating a culture of learning and supportive feedback"[19]. While in many places, school communities of practice are not viewed as hugely innovative, the experience on EQUIP-Tanzania has found that a regular forum where teachers come together to discuss professional matters and develop peer support mechanisms is an innovation in the Tanzanian context.

Results of a major study into Teaching Practices and Pedagogical Innovation by the Organisation for Economic Cooperation and Development (OECD) also concur with the IfE findings, suggesting that "the main driver for advancement is developing a large repertoire of classroom teaching practices as well as taking collective responsibility and working co-operatively to improve instruction". This suggestion comes with a health warning about long working hours and notes that, "intensive forms of co-operative professional learning can be time-consuming"[20]!

Teacher Resource Centres in Nigeria

The time and space required for peer group reflection and teacher learning clusters etc., suggests the benefits of district teachers' centres to offer regular CPD inputs with the required resources available. IfE's **Mentorship Community of Practice** had merits in bringing a far-flung group together online, however face to face contact and discussion among professional educators has been a strong feature of many Cambridge Education-managed programmes. TDP Nigeria is now moving to providing audio-visual content for Teacher Facilitators on desk-top computers at ICT Centres, rather than on tablets. Use of these Teachers' Resource Centres could be revitalised and expanded for the wider profession.

Head teacher and mentor support

Head teachers' engagement was important in many of the IfE projects. It allowed for full involvement of teachers and others, at least passively, to participate and acknowledge the value of the intervention in improving teaching capacity in the school by approving the CPD. Few IfE projects focused on the head teacher's active involvement. However, Achieving Learning Outcomes for All included development of a more discrete head teacher role in teacher development and the **Coaching School Leadership to Achieve High Level learning Outcomes** specifically targeted head teachers as leaders of learning alongside more managerial functions. John Hattie writes of the benefits of collaborative expertise in schools and claims that "the greatest influence on student progression in learning is having highly expert, inspired and passionate teachers and school leaders working together to maximise the effect of their teaching on all students in their care."[21]

Similarly, in Rwanda integrating school-based mentors and the Sector Education Officers (SEOs) into the projects offered further mentoring/coaching support to complement the innovative approaches and created a more conducive environment for CPD while affording greater legitimacy. The problem faced in enhancing or creating roles for local government officials, valid and useful as they may have been, was that they need to be clearly defined, ideally as part of their job descriptions, and sanctioned by the relevant authorities. SEOs' hesitancy to engage in **Coaching School Leadership** showed that the coaching role given to SEOs needed to be in line with existing policy and practice or be especially approved. **Strengthening Teacher Effectiveness through Mentoring** suggested the importance of flexibility when engaging local education officers. This was achieved through reflections on the expectations from SEOs and the decision was made to lighten the workload of SEOs.

[19] Barber et al, 2012, op cit
[20] S Vieluf et al, (2012), Teaching Practices and Pedagogical Innovation: Evidence from TALIS, OECD Publishing
[21] J Hattie, 2015, What Works Best in Education: The Politics of Collaborative Expertise, Pearson, London

EQUIP-Tanzania's adaptive programming approach has been used to address inefficiencies and scepticism in cascade systems of teacher and head teacher training as the training programme evolves. Having identified that distrust mostly came from disinformation or lack of information between levels of the system, a Partnership Training Model was developed to overcome this. Functionaries from different levels were trained together. For example, Ward Education Coordinators (WECs) and head teachers were both trained on school leadership by Inspectors – so now both functionaries could agree on what each of them should be doing and how to do it. Further, Inspectors were now seen as part of the team for school improvement and not merely critical assessors of 'how bad things were going', which was a common complaint. WECs and head teachers were also trained together to jointly support School Committees, further enhancing the relationship.

4.2.4 New ways of engaging communities and parents

The concept of networks to support education reform extends into the wider community. As with many school-based reforms, parental and community engagement in their children's education can hardly be seen as ground-breaking innovation from a global perspective but in Rwanda, and many other countries where Cambridge Education has worked, it marked significant change. Most community intervention was to support the work of the school, often to improve attendance, and was still firmly within the innovation strategy of improving established institutions. This does not diminish its value and several Cambridge Education projects have achieved positive results by getting parents involved and improving their knowledge, attitudes and practices.

Under IfE Rwanda, **Mubyeyi, Tera Intambwe! (Parents, Step In!) Initiative** introduced Community Education Workers (CEWs), identified from within the local communities. This was loosely modelled on the Community Health Worker, and saw a body of enthusiastic and committed outreach workers who connected directly with parents and children in the community to advocate against dropout. **Mubyeyi, Tera Intambwe! (Parents, Step In!) Initiative** demonstrated improved perceptions towards education and there were significant increases in reintegration of primary learners in districts where the innovation was introduced. Project evaluations indicated CEWs were the main reason for improvements in parental attitudes to dropout.

Shifts in understanding were also recorded among parents of children with disabilities. Both the **Inclusive Education Partnerships** and **Inclusive Futures in Rwanda** surpassed their target figures for numbers of children with disabilities enrolling in school. Both projects utilised group discussions with parents and actively engaged them in school and community activities to promote inclusion. IfE findings suggested that parents are more inclined to support their children's learning once they have a greater understanding of the rights of their children to access quality education and their own responsibilities for making this possible.

ESSPIN faced the significant challenge of helping communities understand their rights and responsibilities to engage with their local primary schools in order to demand improved school leadership, teaching practice and learning outcomes.

ESSPIN adopted the innovative approach of interactive 'theatre for development' to highlight common issues about primary education and mobilise support for better schools. Script writing workshops with local stakeholders identified specific community concerns and contributed to the education debate at state level. Working with actors who understood the local languages, culture, religion and politics ensured messages were effectively communicated.

Live community theatre offered a unique, personal experience. People identified with the characters and recognised the schools presented as their own. At the end of each performance they found themselves drawn into the drama as the actors asked them how to address the issues raised in the play. Lively debate would ensue, sometimes with pledges of immediate support or action, sometimes with calls for a response from government.

Community theatre made a dramatic and enduring difference to the lives of many community members and their children. About 55,000 people watched the ESSPIN plays with a good cross-section of local communities attending – including many that had shown no prior interest in their local schools. Bringing people together to discuss education issues raised a 'voice' that demanded change and encouraged community involvement in school management. An impact study and follow-up field research provided qualitative data of increased school attendance and improved school performance as a direct result of the theatre.

4.2.5   Empowering community activism

An important part of the IfE community engagement initiatives was developing a greater expectation for accountability and responsiveness between education providers and communities. Although parental engagement is nothing new and the role of parents – through Parent Teacher Associations (PTAs) and School Management Committees (SMCs) – has been developed in many contexts, Rwanda IfE offered further experience and some notable variations.

Mubyeyi, Tera Intambwe! (Parents, Step In!) Initiative strengthened the capacity of parents to contribute to effective school management through PTAs. Similarly, the **Gasabo School Development Programme** developed and implemented a framework for the local community, and worked with community educational leaders to support school management. **Improving quality of primary/lower secondary education through community engagement in management of school resources** focused solely on community engagement in school resource management by training SMCs to become more involved in the management of school resources. In addition, an initiative was put in place in the community to hold education officers to account for the quality of education in local schools. **Ndi Hano! (Here I am!): Daily teacher and pupil attendance management using SMS reporting** generated data on teacher and pupil attendances and intended to enhance community accountability by making this information more transparent. Essentially, these innovations tackled the issue of ownership by getting parents more involved in the education of **their** children in **their** schools, whereas previously parents had assumed the state was solely responsible.

Nigerian School-Based Management Committees

ESSPIN's community engagement/ school-based management initiatives provide valuable learning on group formation and the promotion of voice and accountability through extensive training and monitoring of school-based management committees (SBMCs). The IfE timeframe and resources available cannot be compared to those available in Nigeria.

The **Emergent Literacy and Maths Initiative** offered an innovation strategy supportive of formal schooling by working with parents outside schools to develop their capacity to take an active role in their children's early development at home. Parents were trained to do simple activities with their children that they could easily remember – through use of ELMI activity cards – and that could be conducted around the house, in the market, etc. The innovation demonstrated parental empowerment in that parents started to understand that they had something to offer to their children in terms of learning, even those who were illiterate themselves. This element of the project proved as successful in preparing children for school as parallel efforts in Early Childhood Care and Development (ECCD) centres. The active involvement of parents in their children's education contrasted favourably with other projects, such as **Community Engagement in the Management of School Resources** which sought to instruct parents and change behaviours and did not make more productive connections between schools and communities as education resources.

Both **Green School Initiatives** and **Promoting spatial thinking in natural resource management through community mapping** had great but largely unrealised potential to move education more firmly into the informal sector in order to supplement schools through the use of community as co-implementers and key resources. There was further potential for more disruptive innovation inside and outside school by creatively developing teaching aids and the use of space in the local environment. This would have allowed the projects to develop knowledge and skills that were seen to complement rather than compete with established subjects on the curriculum.

Valerie Hannon, who leads the UK-based Innovation Unit would recognise this sort of 'permeable boundary' with community and the "concept of partnership between community,... practitioners, and professional educators [is] at the heart of the work. In addition it [in this example, **Promoting spatial thinking**] incorporates 21st Century ICTs and the acquisition of related skills, using digital media to enquire, represent and capture the work."[22]

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[22] Valerie Hannon, 2009, 'Only Connect!', op cit, re 'Eastfeast' which seeks 'to know our world through a plot of land'

Introducing national curriculum into Nigerian IQTE schools

ESSPIN's Islamiyya, Qur'anic and Tsangaya Education (IQTE) initiative responds to community demands for elements of a modern curriculum to be introduced to traditional Islamic schools in northern Nigeria. After extensive research and consultation, the IQTE project has seen the extensive deployment of teachers selected from the local community by Malams and intensively trained to run a part-time community school for learners from a number of nearby IQTE schools. Communities provide the school building and maintain it, as well as monitoring teacher and pupil attendance. The school timetable is flexible to fit with the Malams at the IQTE schools and allows the modestly paid teacher to pursue other jobs. Previously marginalised children can now be integrated into the mainstream by sitting for and passing the general transition examinations into junior secondary school. This transformative innovation is now being scaled up across northern Nigeria with government support. In future, millions of children will be able to receive an Islamic education responsive to the demands of modern society.

4.3 Creating the conditions for systemic innovation for education

Conditions in the wider sector – the macro level – need to be conducive to innovation for new approaches to education to be encouraged, nurtured and sustainably taken to scale. Experience in Rwanda and across other Cambridge Education programmes has shown that innovation pilots and seed funding can be managed effectively by dynamic non-government organisations (NGOs – including the private sector), with the monitoring and mentoring support that Cambridge Education has been able to provide. But for success at project level to be more widely adopted and sustained in order to improve learning outcomes of millions of children, a systems approach is required. Non-state actors and new modalities can still be a big part of this, but essentially the government is going to be central to delivering education as a public good. This section suggests how systemic reform can be encouraged to provide more fertile ground for innovative approaches to take root and spread.

4.3.1 Responsive policy and curriculum development encouraging innovation

Rwanda's Education Sector Strategic Plan (ESSP) notes: "Encouraging innovations in the education sector is a central element of MINEDUC's strategic focus. Introducing innovative solutions to address existing challenges in the sector will act as a catalyst for achieving overall sector goals."[23] This provides a supportive framework for innovation and recognises that developing a managed process of innovation in education is essential in informing the progressive policy debate within MINEDUC.

Fit to policy was identified as a necessary condition for success in the learning from Rwanda IfE, coupled with curriculum compliance. The **Early Childhood Caregiver Professional Development and Certificate Programme**, for example, successfully addressed the urgent needs of the 2011 Early Childhood Care policy. In contrast, two of IfE's more successful projects (in terms of outcomes), **Emergent Literacy and Maths Initiative** and **Language Supportive Textbooks and Pedagogy**, ran into difficulties where they challenged MINEDUC support for ECCD centres and the English language medium policy, respectively.

The development of a new curriculum in Rwanda taking place at the same time as IfE provided a good opportunity for advocacy and influencing education policy. **IWitness Rwanda**, which used genocide testimonies via internet resources to create critical thinking and promote positive values, significantly improved its chances of sustainable success because it aligned with the ESSP and was also closely involved in the development of the new peace education curriculum.

There were further policy implications for future state facilitation of innovative approaches to education service delivery. Various IfE projects highlighted the need for greater flexibility in the areas of:

- **government terms and conditions of service** – to encourage supportive participation by district-based staff and include promotion of innovative approaches in performance contracts and appraisals
- **the curriculum** – to allow for new subject content and new approaches for delivering the curriculum
- **teacher training, pre-service and in-service** – to respond to possible new curriculum developments and CPD developments

These points are particularly relevant to discussions on scale-up of innovation pilots and are recurring themes of scale-up considerations for government agencies.

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[23] Rwanda Education Sector Strategic Plan, 2013/14 – 2017/18, MINEDUC

4.3.2   The importance of broad leadership support for innovation

In many countries where Cambridge Education works, political and social structures and economic institutions do not yet provide the most conducive environment for generating new ideas and nurturing innovation. Innovation necessarily involves experimentation, action research and challenges to the accepted order. In the global and national context, Barber suggests that systemic innovation to enhance education reform is enabled by institutionally well-structured, rule-based societies and cultures that value education and are progressively open to new ideas. Leadership is vital, and in a democratic political framework that allows leadership and decision making to be spread, it inspires initiative and non-submissive behaviours, and welcomes diversity. Without openness to new ideas and opportunity for debate and dissent across disparate groups, the creativity that goes hand in hand with innovation cannot flourish. "Many systems lack capacity to innovate and some public systems where there is an effective monopoly actively crush it."[24]

Under IfE, leadership was recognised as a key 'domain of innovation'[25], with the Minister for Education and/or other most senior figures identified as necessary champions of systemic change. The IfE diagnostic survey of MINEDUC's capacity for innovation found strong capabilities for leadership and innovation-strategising within the central ministry, matched by strong commitment, but this was much less evident at the decentralised levels.[26] There are inherent risks in innovation and the major cultural change to overcome is the fear of failure and its repercussions. This is particularly difficult in an autocratic, hierarchical governance framework – especially one with limited capacity to respond to the plethora of initiatives already on the table – unless there is firm and enduring commitment from the top and this is effectively communicated throughout the Ministry.

A consistent finding revealed in the Rwanda diagnostic report was "the top down and centralised nature of the education system that acted as a brake to innovation because it made seeking permission to undertake innovation from centralised levels bureaucratic and arduous. It also created a context in which potential innovators were unprepared to take the risks associated with being innovative in case they did not receive support from the centre". In Rwanda, the evident commitment to innovation from the Presidency and within the highest echelons of MINEDUC, as reflected in the language of the ESSP, was somehow lost in translation to decentralised levels and confused by changes in MINEDUC's senior leadership. The detrimental effect of poor internal communication and awareness-raising from

the leadership was then compounded at district level by an evident lack of administrative capability or processes to encourage or harness innovative approaches to education service delivery. EQUIP-Tanzania has similarly noted the need for "enabling schools to feel freer to embrace innovation and put their own mark on it – getting away from doing things because the system demands it".

The importance of political buy-in

TDP in Nigeria has demonstrated the advantages to be gained by securing broad senior Ministry commitment and political leadership for innovative initiatives. TPD initially promoted the use of 'trainer in the pocket' mobile technologies for teachers' CPD by providing senior Ministry and college of education leaders with first-hand experience of the same innovation working in Bangladesh under the EIA programme. Having jointly developed the vision of how the CPD package could improve teaching and learning in the northern states of Nigeria, TPD acquired powerful allies in securing state resources to produce materials, train teachers and now roll-out the programme to new states. These 'change agents' are promoting TPD across the ministries, including intervening to institutionalise Teacher Facilitators (mentors/coaches) at the local government level – a move described as 'the winning ticket' in gaining state-wide traction for the scaled-up programme.

4.3.3   Rapidly creating an enabling environment for innovation

MINEDUC's hands-on involvement and commitment to IfE was at best mixed, with designated people for the project and their counterparts engaging sporadically with the added constraint of being able to secure the time and commitment of senior management among other pressing priorities. Securing greater project management engagement from MINEDUC from the outset would have helped develop a sense of ownership for the 26 innovative initiatives, most of which were in the state sector. However, embracing innovation for education required a major change in government policy and practice across the education sector. For MINEDUC to become an innovating organisation a paradigm shift is needed – in effect a mix of organisational and cultural change across Ministry and its agencies. As a Kellogg Foundation study on systematic innovation reports, intentionally setting the conditions and culture for success needs to be the starting point because, "[t] he creation of a culture that is supportive of continuous innovation within the organisation underlies all other elements of the innovation process."[27]

[24] Barber et al, 2012, op cit
[25] See Figure 5
[26] IfE, 2015, MINEDUC Capacity to Support Innovation - Diagnostic Report, MINEDUC, Kigali
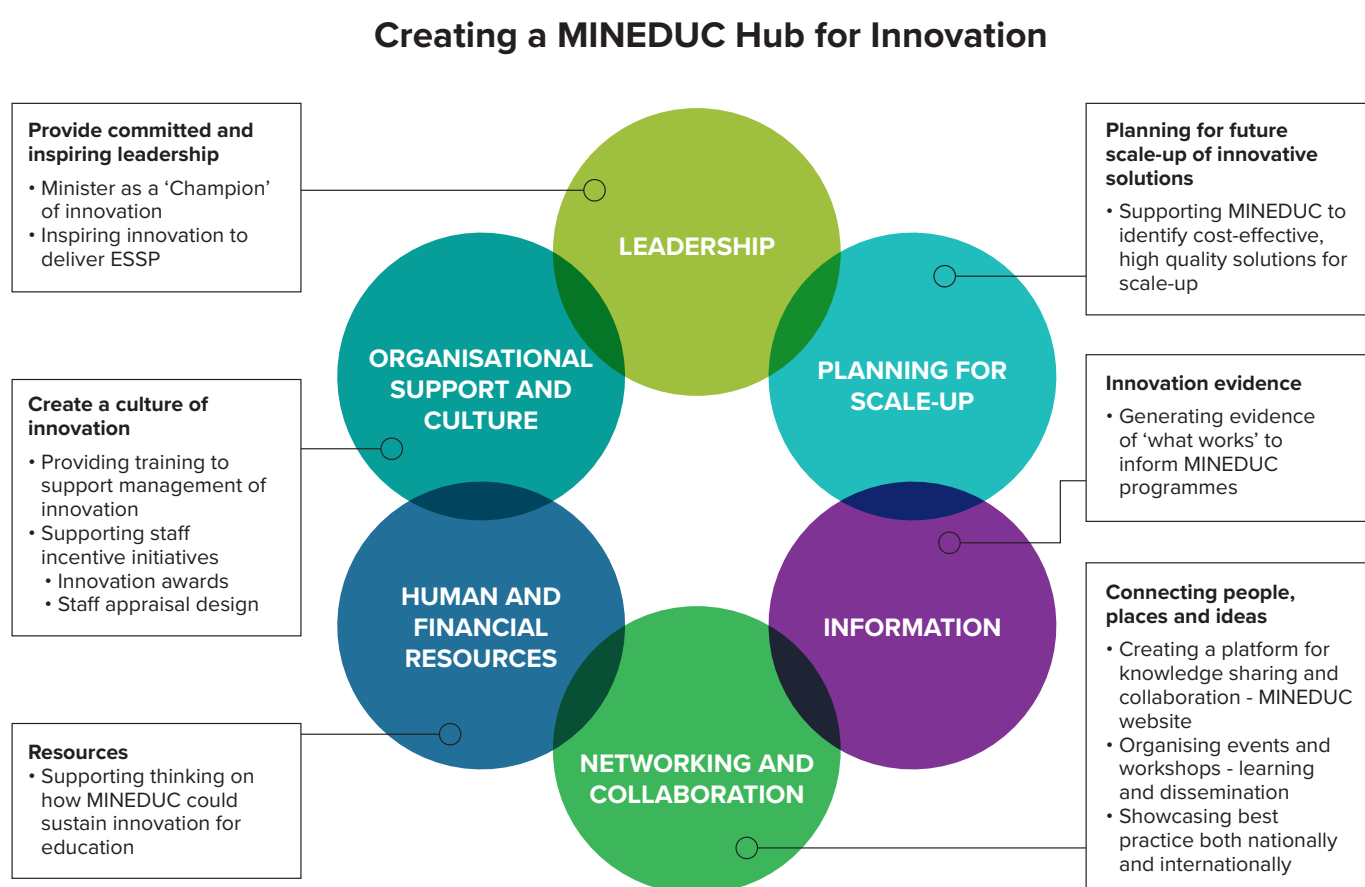[27] G Kasper and S Clohesy, 2008, Intentional Innovation: …, WK Kellogg Foundation

Hub for Innovation

The HfI initiative under IfE Rwanda was developed with the support of DFID's Head of Innovation and sought to create a best practice framework that promoted a strong culture of innovation with reference to six domains of an enabling environment for innovation[28] (See Figure 5 below). The HfI was a conceptual proposition, rather than seeking the creation of a distinct entity. Over the long term it is desirable that innovation is institutionalised within MINEDUC and the wider education sector and the 'Hub' initiative was very much about establishing new norms and behaviours within MINEDUC. Policy initiatives and ESSP statements are important but in change management, as Colin Bangay, DFID Education Adviser, notes, "'culture eats strategy for breakfast…' Changing culture is the heart of enduring reform."[29]

The task of embedding innovation within MINEDUC and its agencies should have happened earlier in the IfE programme cycle. This would have helped create and strengthen the desired enabling environment and engagement with innovations in the IfE projects as they were being nurtured. Government could then have better facilitated the projects, and learning from IfE would have been more of an experiential process. A 'masterclass' seminar on innovation for the senior leadership and the innovation training for senior managers would have helped set the scene instead of being one of the closing acts, and the various innovation activities and strategic studies could have been better supported and would have had more time to gain traction. It is easy to note with the benefit of hindsight that HfI was too little, too late considering the enormity of the challenge of sector reform, but it provides valuable insight into the challenges and possible strategies of systemically embedding innovation.

Figure 5: 'Domains of innovation'

Creating a MINEDUC Hub for Innovation

Provide committed and inspiring leadership
- Minister as a 'Champion' of innovation
- Inspiring innovation to deliver ESSP

Planning for future scale-up of innovative solutions
- Supporting MINEDUC to identify cost-effective, high quality solutions for scale-up

Create a culture of innovation
- Providing training to support management of innovation
- Supporting staff incentive initiatives
  - Innovation awards
  - Staff appraisal design

Innovation evidence
- Generating evidence of 'what works' to inform MINEDUC programmes

Resources
- Supporting thinking on how MINEDUC could sustain innovation for education

Connecting people, places and ideas
- Creating a platform for knowledge sharing and collaboration - MINEDUC website
- Organising events and workshops - learning and dissemination
- Showcasing best practice both nationally and internationally

LEADERSHIP

ORGANISATIONAL SUPPORT AND CULTURE

PLANNING FOR SCALE-UP

HUMAN AND FINANCIAL RESOURCES

INFORMATION

NETWORKING AND COLLABORATION

**Source:** J Wong, 2012, Building a Culture of Innovation, IfE/DFID

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28 J Wong, 2012, MINEDUC Innovation Hub: Building an enabling environment and culture of innovation, DFID
29 Colin Bangay, 2016, Education systems reform: 'It's about the meal, not the menu', Center for Education Innovations

4.3.4 Brokering partnerships to support innovative approaches

Ambitiously, MINEDUC as HfI was envisaged as the pivotal player in facilitating the creative process of innovation – sitting at the centre of a complex and dynamic innovation landscape, making the connections with multiple stakeholders and brokering partnerships to promote change. This further reflects the 'Networking and Collaboration' domain of innovation (see Figure 5 above). In driving through the six stages innovation, MINEDUC would connect informants and evidence gatherers; innovators and incubators of new products or processes; funders and investors; education policy makers and planners; communicators within the education system and the wider media who raise awareness of the possibilities of innovation. The anticipated role of MINEDUC as broker is shown below.

Figure 6: MINEDUC as innovation broker
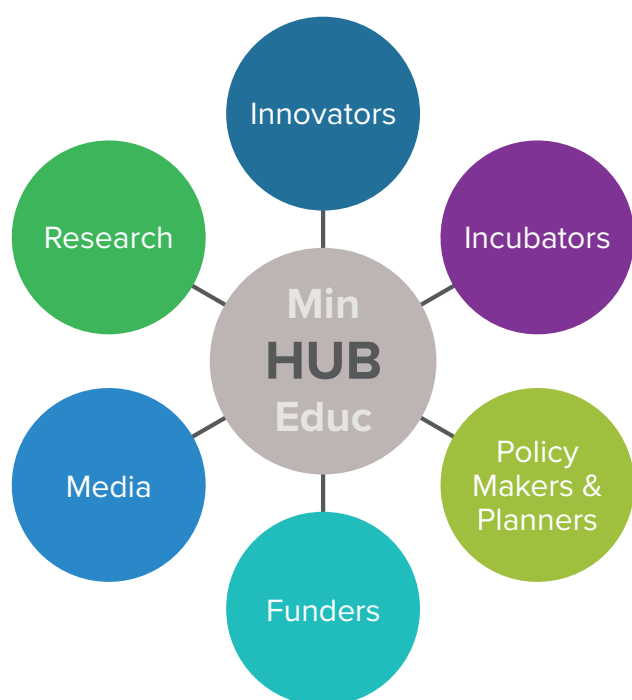
Source: IfE, 2014, Developing MINEDUC as Hub for Innovation in Education, MINEDUC, Kigali

These linkages offer potential to "create structures and relationships where information and ideas flow in all directions"[30] and there is systemic capacity to innovate going beyond reform of the education system. The selection of non-state actors as IfE grantees was intended to draw from a deeper pool of creativity while bringing in broader education experience along with project management resources. In Nigeria, ESSPIN has successfully brokered partnerships between state governments and civil society organisations (CSOs) to jointly deliver more comprehensive capacity building support to SBMCs. These examples are well aligned with the innovation thinking that looks for connections with the wider world and the possible development of "learning eco-systems"[31], that reach beyond school, and to "incentivise collaboration across discipline and sector boundaries."[32]

Innovation transcends system boundaries on a continuum from school to education sector, linking with local community and wider society and allowing for constructive collaboration. As noted in a Finnish study of drivers for emerging sectoral innovation systems: "An innovation systems approach emphasizes interactions between institutions and organizations in the private and public sectors (companies, research organizations, intermediaries and individuals) that contribute to the development, application, commercialization and diffusion of new technologies, processes and ways or organizing."[33] Earlier networking of partners from the public and private sectors to facilitate development and scaling of innovative approaches was noted as a lesson from the Ilm Ideas 1 programme in Pakistan. The importance of collaboration for scale-up is also emphasised by the Kellogg Foundation: "Networks are also critical to the diffusion and spread of innovation, as adoption often relies on choices made by other actors within a system."[34]

The HfI was intended as a step towards a "Learning Society [that] needs strong stewardship from a new coalition of governments, businesses, NGOs, and social investors who together bring the legitimacy, innovation, and resources that can make it a reality. The membership of this movement will vary, but it must deliver a clear articulation of its collective purpose and goals, and be open to an ever-expanding group of supporters, innovators, and funders."[35]

[30] Barber et al, 2012, op cit
[31] V Hannon, 2009, 'Only Connect!'…, op cit
[32] Julia Gillard, former Australia PM, cited in Barber et al, 2012, Oceans of Innovation, op cit
[33] Kalle A. Piirainen, et al, 2012, An analysis of the drivers for emerging sectoral innovation systems in developing economies, Ministry of Foreign Affairs of Finland
[34] G Kasper and S Clohesy, 2008, Intentional Innovation: …WK Kellogg Foundation
[35] Richard Halkett et al, 2010, op cit

Brokering partnerships in two Nigerian education programmes

ESSPIN's two state pilots of **NSAMS** indicate the potential for such broad coalitions for change. The state governments are working with mobile network service providers and the Nigeria Communications Commission with potential for further private sector and donor funding coming in for the scale-up. Feedback from ESSPIN suggests CSOs might have provided added capacity to government efforts for testing the innovative approach.

ESSPIN has successfully brokered effective partnerships between state governments and 57 CSOs to support and mentor community-based groups working to improve schools through 11,000 SBMCs. This innovative relationship is increasingly sustained by government social mobilisation departments who acknowledge the added value of the CSOs' collaboration, whereas they once feared competition and interference.

TDP's brokering activities recognise the influence of professional associations of college lecturers and teachers' trade unions to secure support for innovations among stakeholder groups vital for successful implementation.

### 4.3.5 Attracting sustainable funding for innovation

Proven innovations are most likely to be successfully sustained in the final stage of wider adoption and diffusion when state funding is made available. An innovating ministry will also readily fund interim scale-up if the domains of innovation and an enabling environment are well established. However, there is room for other funding partners to engage in innovation for education. This is most significant when new ideas are being incubated and, especially, for initial scale-up when the often favourable conditions and support provided under a small pilot cannot be replicated and financing is needed for a fraught period of higher risk and possible failure and recalibration during expanded testing.

Social entrepreneurs

The issue of sustainability is a key determinant in the design and implementation of Ilm Ideas 2 in Pakistan. Social entrepreneurs are widely recognised as an important source of innovation and offer access to funding in addition to that provided by the state and going beyond the bee-line profit motive of corporate enterprise. Social entrepreneurs are driven by a sense of mission and, in addressing underserved social needs, can bring in a wealth of resources from their own organisations as well as mobilising others and bringing in resources beyond their immediate control. Notably they can pull in social investors willing to take risks in providing the start-up capital for innovation in education.

Deploying entrepreneurial skills for social ends, social entrepreneurs work across the traditional public sector, some large private sector corporations and at the most innovative edge of the voluntary sector (See Figure 7). They offer driven, ambitious leadership, with great skills in communicating a mission and inspiring staff, users and partners. They can function as an important broker to create loose coalitions that can operate informally, utilising people, places and products from outside the mainstream education sector. As Shahida Saleem, Team Leader of Ilm Ideas 2 notes: "In the context of education, social entrepreneurship models provide an opportunity to respond quickly, build long term sustainability and create avenues for collaborations between multiple sectors."[36]

Figure 7: Sources of social entrepreneurship

The social entrepreneurs' sector
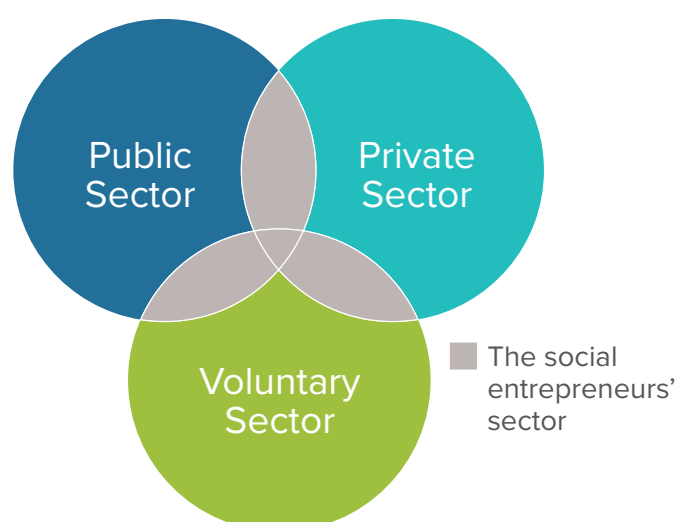
Source: C Leadbeater, 1997, The Rise of Social Entrepreneurs, Demos, London

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[36] S Saleem, 2016, What Role Can Social Entrepreneurs Play in Education?, WISE ed.review, Qatar Foundation

Both Rwanda IfE and Pakistan's Ilm Ideas 2 programmes recognised the importance of forging valuable connections with those who offer creative (often high-tech) solutions, fresh minds, and a flair for investment, and long-term gain over short-term stability and safety. However, bringing business acumen to the world of education sector reform and development programming requires some adjustment on both sides. Educationists have to be open to new ways of working and the introduction of new products and services to the sector and, inevitably, social entrepreneurs have to conform to some institutional norms and systematic processes. The chances of successful collaboration are greatest when the congruence of goals is closest and that may require an uncomfortable degree of compromise. The bottom line in education is measured by learning outcomes, rather than units sold, and investment in this futures' market seeks a return in human capital. The role of broker, as IfE and Ilm Ideas 2 envisaged, becomes critical.

Low cost private schools

Private schools offer an opportunity to improve and possibly reinvent formal learning. There has been much discussion regarding the place of private schools in the systemic reform of education in developing countries, and the extent to which national governments and donors should influence or intervene in the private school market. Depending on points of view, private schools are either leveraging or competing for struggling state systems' much needed complementary resources. Research by Tooley and others, and a Cambridge Education study in Nigeria[37], clearly reveals the extent to which low cost private schools[38] are meeting the demand for education among poorer households, especially in the world's mega-cities. For example, upwards of 70 percent of school children are attending private schools in Lahore and Lagos – the vast majority of these schools are low cost. Governments are failing to keep pace with the number of school places required and poor parents' perceptions of better performance in the private sector prevail.[39] This does not mean that the low cost private schools are good. However, the evident marginally higher learning outcomes represent more value for money, particularly for families spending a relatively high proportion of their household income on education.

Whether state provision will catch up in terms of quantity and quality remains to be seen (and whether that is desirable is another argument) but, at present, for millions of poor children "there is no means of achieving universal high quality education without taking the private sector in to account."[40]

Direct funding for schools

Direct funding for schools is potentially a more sustainable funding mechanism, making more effective and efficient use of scarce resources. Funding schools directly from the treasury instead of through labyrinthine government finance systems has been introduced in many countries to give schools greater autonomy, align education spending more closely to the need, and reduce 'leakages' in the system. EQUIP-Tanzania has taken this a step further by the decentralisation of £23m of programme funds to Local Government Authorities (LGAs) to strengthen existing education governance systems and increase the sustainability of programme interventions. Cambridge Education works with UK aid and the Government of Tanzania at national and sub-national level to agree the process, plans and budgets and supports LGAs to use the funds effectively. These funds pay for a range of LGA-implemented capacity building as well as providing locally administered grants direct to schools and to Ward Education Officers to enable more regular LGA support to every school.

Also in Tanzania, the US$250m Education Programme for Results (P4R) releases funds to the Government of Tanzania based on their achievement of a set of pre-agreed results. One innovative aspect of the programme is that funds are sent directly to District Councils each year based on their ability to utilise performance information and allocate teachers equitably across all schools. Districts are free to spend these funds as they see fit to improve education delivery in their locality.

Cambridge Education's embedded P4R technical assistance team also helped improve the flow of government funds to schools by developing a new mechanism whereby funds were transferred directly to schools from the Ministry of Finance using the commercial banking system. All 20,000 government primary and secondary schools in Tanzania now receive funds directly into their bank accounts every month.

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[37] J Harma, 2011, Study of Private Schools in Lagos, ESSPIN/DFID, Abuja
[38] Low cost is defined as fees of less than 25,000 Naira per year (currently approximately £75pa)
[39] ESSPIN conducted a Monitoring Learning Achievement exercise which tested children in public and private schools and found that private school children performed better in nearly every instance.
[40] M Barber et al, 2013, The Good News from Pakistan, Reform, London

An innovative approach to low cost private schools in Lagos State

The DEEPEN programme takes an innovative approach to improving the offer made by low cost private schools in Lagos. Public investment in private education remains an issue. DEEPEN is the first major education programme to adopt an M4P approach. In doing so, DEEPEN goes beyond protecting poor families' household spending choices through familiar voucher or cash transfer schemes that offer children the opportunity to attend state or low cost private schools once basic costs can be covered. The programme also offers an alternative to increasing the availability of private school places and directly leveraging results by funding the supply of private schooling, as seen in the Punjab Education Foundation in Pakistan.

DEEPEN's goal is systemic reform of the low cost private education market through a disruptively innovative process of technical assistance rather than financial inducements. Parental preferences for low cost private schooling are acknowledged, in a context where the state is perceived as unable to meet the demand for education in terms of quantity or quality, and programme efforts are focused on creating an enabling environment for the private education market to flourish. This means avoiding direct interventions that would distort the basic demand and supply of private education, instead focusing on developing a wider system of supporting functions within an improved regulatory framework of formal and informal rules and codes of practice.

DEEPEN is supporting the Lagos State Government to introduce a graded system of school recognition for all schools, in place of the existing binary approval system that excludes schools that do not meet the approval requirements. This allows weaker schools to stay in the market and access the resources needed to improve. On the supply side, the capacity of school improvement service providers, such as organisations offering teacher or school leadership training, is being developed in partnership with Private School Associations. On the demand side parents are offered better access to timely and relevant information to make informed choices about their children's education through improved media coverage of education issues and greater community engagement by CSOs. Greater availability of bespoke financial services gives both private school proprietors and parents the opportunity to moderate cash flow and manage available resources more effectively. The intended results of a more responsive market where the supply of quality education meets articulated and facilitated demand, are better private schools that offer value for money and achieve improved learning outcomes for millions of Lagos school children outside the state system. In the process, DEEPEN is transforming government approaches to private education and the education, media and financial services markets.

4.3.6 The importance of being a learning organisation

A significant element of the HfI initiative was to manage the knowledge emanating from the 26 IfE projects (this matches the aforementioned Information and Networking and Collaboration 'domains of innovation'). Problem definition in the first stage of innovation calls for research and analysis of education sector priorities to inform and direct creative solutions, thus avoiding the situation of great solutions seeking a problem. It was then essential to document and demonstrate the power and possibilities of IfE innovations through effective monitoring and evaluation and to inform MINEDUC's decisions on pilot project scale-up and wider diffusion of innovative approaches. There is also the potential to utilise learning from other programmes and other countries.

Hand in hand with developing the knowledge management function within the education sector is the need to communicate effectively with internal and external audiences in order to apply the learning from innovations and to communicate the results of innovative initiatives. This strategic communications has three main purposes:

1. to inform advocacy for influencing policy decisions on further expansion and investment in innovation
2. to change behaviours of education practitioners
3. to mobilise wider societal support for changes in education to improve learning outcomes

Creative commons in Ghana

Significant evidence shows that open publishing models offer better value for money than traditional copyrighted resources. While T-TEL materials have been tailored specifically to the Ghanaian education context, they can be easily adapted to others. At present, there are very few open tutor/teacher education programmes such as T-TEL in action, despite a pressing need for more professional development opportunities in Sub-Saharan Africa.

By offering T-TEL resources as open educational resources, the Government of Ghana and UK aid are ensuring that T-TEL is contributing to education efforts elsewhere and supporting the UN's Sustainable Development Goal: Equitable Education for All.

Information systems

The daily data needed to inform government decision-making goes beyond the monitoring and evaluation and knowledge management of innovation projects. Although there was only one, failed, attempt to develop a systematic approach to school and district data collection under IfE, it is the regular, routine collection and analysis of data that informs education management. Citing the example of Pakistan, Michael Barber makes it clear why relentless monitoring is essential: "For the education reform to work, you have to know what's happening (across the province) as near to now as possible. That way, if something isn't working, you can address the problem immediately. If what you try first doesn't work, you can try something different. The point is, you know and then you act."[41]

Introducing information systems in Nigeria and Tanzania

ESSPIN is using ICTs to introduce a state system level Integrated School Development (ISD) Index and Integrated LGEA Database at the sub-state level based on annual school census and other administrative data. These simple tools will support educational planning, state investment plans and sector performance in all six states that ESSPIN is working in. As in Rwanda, appropriate IT infrastructure and effective IT training for staff that realise the benefits of the systems are vital.

EQUIP-Tanzania is introducing a school-level School Information System form (paper and digital) that can provide schools, communities, wards and districts with more regular, reliable and organised information. Supplementing the national Education Management Information System (EMIS), it will enable more regular data collection to support more reliable data in a more user-friendly format. It will be linked to school and community scorecards, ward-level comparisons and district dashboards to support performance management, decision-making and accountability at all levels – thus helping to support more focused school improvement actions.

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41 M Barber, 2013, The good news from Pakistan, Reform, London

4.3.7 Establishing a dedicated innovation unit – a recommendation

It was perceived at an early stage in the HfI project that there needed to be a 'home for innovation' within MINEDUC, given that the cultural change required to embed innovation and for MINEDUC to become an innovating organisation was not going to happen overnight. Even if a culture of innovation was established, there was still a long-term need for it to be managed by the Ministry in much the same way IfE had been managed by Cambridge Education – but with even closer linkages to research, policy, planning and implementation. A project team of senior MINEDUC officials from different departments and agencies was initially formed to lead the process of transformation in collaboration with the HfI development partners but this suffered the same problems as other attempts to secure MINEDUC participation and commitment, and was abandoned. It was recommended that in future a specialised innovation unit be established[42] because, as one senior MINEDUC official put it, "I think there is need to have a department or a unit – an office that is dedicated strictly to innovation. I think it's unrealistic to expect that innovation will, in the short term, become the natural thing to do, the spontaneous thing to do". This unit would in effect serve as the hub within the hub. In Rwanda, an ongoing functional review provided some opportunity to develop this innovation unit, expanding thinking behind a new 'ICT and Innovation Centre' and the recognition of the strategic importance of MINEDUC internal and external communications and knowledge management.

The innovation unit could have responsibility for:

- developing innovation strategies (including the implications for terms and conditions of service and performance targets)
- ongoing assessment of innovation culture in the education sector
- increasing capacity and aptitude for innovation across the sector through staff training and promotional events at national and sub-national level
- making time and space available at all levels for innovative approaches to be tested
- managing the action research of innovation projects and the associated knowledge management function[43]
- managing funding ear-marked for developing innovative approaches in education

Establishing and supporting an innovation unit early in the life-cycle of innovation programmes could be congruent with the preliminary efforts to create a culture of innovation as a pre-requisite for any innovation project activity. The management of that project activity needs the blend of control and coaching that Cambridge Education was able to bring to IfE, combined with a rigorous mixed-methods approach to monitoring and evaluation to provide the necessary evidence base for further investment in tested innovative approaches.

The award winning Minedu LAB in Peru's Ministry of Education provides a strong working example of an innovative approach to policymaking that fosters the identification of cost-effective innovations in education policy, which are piloted and evaluated using administrative data to determine their effectiveness. Minedu LAB's ultimate aim is to allow the Ministry to make informed decisions on how to best deliver education policies that have an impact in implementation and learning outcomes, and scale up those innovations that prove to be effective. A fundamental and pioneering feature of Minedu LAB is its close linkage to research in the process of innovation and learning.[44]

The literature on innovation for education provides some suggestions as to what the innovation unit might look like. The correlation between innovation and research, policy and planning suggests the innovation unit could sit well within or alongside these functions of Ministry. A counter argument suggests removing the innovation unit from the confines of Ministry to a more dedicated research facility on campus at a university or college of education. Horizons might be broadened further if the innovation unit was removed from civil service and academia altogether as an independent think-tank or quasi NGO able to advise and influence, though it must not be divorced from day to day education practice. Either way, the innovation unit needs to be able to tap in to creativity and inventiveness within the education sector, wider society and business, and international ingenuity. This means bringing together a diverse team of collaborators with different expertise and experiences, including entrepreneurship from outside education. The private sector also points to the possibilities of mixing mature and youthful talent to capture and apply fresh thinking.

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[42] See IfE, 2015, Innovation for Education: a Roadmap for Rwanda, MINEDUC, Kigali
[43] Prof. Mary Metcalfe, former Minister for Education, Gauteng Province, South Africa, noted the urgency of not instigating further research if problems and solutions were already well known and adequately investigated. The Gauteng approach was to innovate at scale immediately, if possible. IfE Conference, 2015, Kigali. The EQUIP-Tanzania team has also commented on the challenge of needing to scale innovations urgently but at the risk of limiting action research and testing and not considering the conditions for success.
[44] http://www.poverty-action.org/blog/peru-education-policy-innovation-lab-wins-award

5.   Conclusion – go innovate!

If 'necessity is the mother of invention', the education crisis in many developing countries calls for some fresh thinking about how to provide quality education for all children. It is debatable how radical education reform needs to be and there is plenty of opportunity to follow John Hattie's advice to build on existing best practice and "stop ignoring what we know and scale up success"[45].
But there is also opportunity to be more disruptive, to reinvent schools and transform learning, with abundant examples from around the world of how change in education can be managed and children can learn in different ways.

Establishing the factors and conditions for success is a necessary pre-requisite for innovations in education to flourish. If new ideas are to emerge and move beyond funded experimental pilots there must be appropriate engagement with multiple stakeholders and early investment in the systemic frameworks and organisational development required to create an enabling environment for innovation.

This means adaptable working both within and across organisations at all levels in the education sector and beyond. Connections must be made that allow creativity to cross between different actors and entities, with the boundaries that define the education sector becoming more blurred. From a government perspective this may require the formation of a dedicated innovation management unit or task team to promote and manage innovation in education and draw the lines from projects to policy and planning.

Time and space are needed at school, in the wider community, and across the education sector to allow individuals and teams to be creative and reflective. To get involved they have to feel they can own innovation as individuals and organisations, and be recognised as innovators without fear of reprimand and, especially, without fear of failure. Once that cultural change is achieved then they can be free to "go innovate!"

[45] J Hattie, 2015, op cit

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