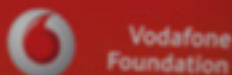




Connected Education

Vodafone
Power to you



Supported by the
Vodafone Foundation



Contents

4	Introduction
7	Connected Education
10	Current issues and obstacles in education
14	Education initiatives making use of digital technologies

15	Our themes
15	Theme 1: Access to online education platforms/apps
27	Theme 2: Teaching on digital literacy
40	Theme 3: Empowering teachers
45	Theme 4: Providing education in refugee camps

55	Key findings
58	Appendices



Access to education

Unequal access to education depending on income and origin

263 million primary and secondary children out of school



Gender gap

Primary age gender gap persists and becomes more apparent as education levels increase

757 million adults and 115 million youth cannot read or write a simple sentence; two-thirds of them are women

Key challenges to be addressed

The SDG target of Quality Education will be challenging to meet and a number of important gaps still have to be addressed.



Sub-Saharan Africa

Biggest gap in primary school enrolment rates

34 million of the **57 million** out-of-school primary age children live in sub-Saharan Africa



Refugees

16.1 million refugees, over half of whom are under the age of 18

Of these, only **2.3 million** have access to schooling

About Vodafone Foundation

The Vodafone Foundation invests in the communities in which Vodafone operates and is at the centre of a network of global and local social investment programmes delivered by 28 local Vodafone Foundations. The Foundation is dedicated to mobilising communities around the world to improve their lives. To achieve this objective the Foundation uses its charitable giving and its privileged access to Vodafone's networks, technology, customers and employees to empower people with the necessary tools to make a difference in the world. The Vodafone Foundation is a registered charity in England and Wales (charity registration number 1089625).

Authors



Richard Swinford
Partner, Head of TIME
Practice, Arthur D. Little, UK



Camille Demyttenaere
Project Manager, TIME
Practice, Arthur D. Little, UK

Supported by:

Martijn Eikelenboom
Managing Partner and Head of
Sustainability Practice,
Arthur D. Little, Netherlands

Xabier Ormaechea
Consultant, TIME Practice,
Arthur D. Little, UK

About Vodafone Group

Vodafone Group Plc is one of the world's largest mobile communications companies by revenue. We have a significant global reach through our activities, subsidiaries, joint ventures, associated undertakings and investments. We provide voice and data services to 470 million people worldwide, with 75%* of our customers living in emerging markets. Mobile technology is already a vital tool in many people's lives and our ambition is to increase access to Vodafone's mobile services to further improve people's livelihoods and quality of life and contribute to sustainable living.

About Arthur D. Little

Arthur D. Little has been at the forefront of innovation since 1886. We are an acknowledged thought leader in linking strategy, innovation and transformation in technology-intensive and converging industries. We navigate our clients through changing business ecosystems to uncover new growth opportunities. We enable our clients to build innovation capabilities and transform their organisation.

Our consultants have strong practical industry experience combined with excellent knowledge of key trends and dynamics. Arthur D. Little is present in the most important business centres around the world. We are proud to serve most of the Fortune 1000 companies, in addition to other leading firms and public sector organisations.

Arthur D. Little's TIME Practice focuses on Telecommunications, Information, Media & Entertainment. The TIME practice has supported well-known brands across the globe in defining growth strategies, business transformation and public policy.

For further information, please visit www.adlittle.com

Copyright © Arthur D. Little 2017. All rights reserved

* As at 31 December 2016



Foreword

Connected Education

by Vittorio Colao
Chief Executive, Vodafone Group

At Vodafone, we believe that the ability to access global information via an affordable device in the hand has the power to truly create a step change in education in developing countries. That is why we are passionate about supporting the Sustainable Development Goal to ensure inclusive and quality education for all and promote lifelong learning.

There are 2.5 billion people in developing countries who have access to the internet today, almost entirely via mobile devices, and this number is growing rapidly. This connectivity creates an opportunity to democratise education – with much higher quality and much lower costs – for children, girls, refugees and small entrepreneurs alike. For children in sub-Saharan Africa, the best global educational resources can be delivered at the most rural level, making them free to be used online or offline. For girls, connectivity can help to address cultural barriers that prevent them from accessing traditional education. And for refugees, connectivity can bring education into their camps, providing them with the possibility of a better future in the camps and when back in their home country. As a result, for all young people everywhere, connectivity can provide not only the means to learn new digital skills but also the platform to create their own business. Once introduced, digital learning will not be restricted to the young, as digital skills can be invaluable for every age, providing an opportunity to overcome loneliness, isolation and weakness.

This report shows that expanding these services in Vodafone's markets and territories could benefit over 85 million people by 2025 and create economic benefits to society of USD 7.3 billion annually. Mobile digital technology is a very powerful tool that can make a huge difference in education, but it is essential we all work in partnership with other industry players, NGOs, schools and governments to achieve these significant outcomes quickly and in a sustainable way.

Vodafone and our Foundation are committed to supporting, with our partners, a step change in global education.

A handwritten signature in black ink, appearing to read 'Vittorio Colao'.

Vittorio Colao, Chief Executive, Vodafone Group



Foreword

Connected Education

by Dr Mary Mendenhall
Teachers College, Columbia University

Mary Mendenhall is an Assistant Professor of Practice in the International and Comparative Education Programme at Teachers College, Columbia University.

There are 263 million primary and secondary-aged children and youth currently out of school and millions more in school who struggle to acquire basic reading, writing and maths skills before they graduate. Reaching these children and the first Goal 4 Quality Education target for the new Sustainable Development Goals, which seeks to ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and Goal-4 effective learning outcomes, will require innovative and technological approaches that leverage both public and private partnerships.

While governments and their Ministries of Education over the world must assume primary responsibility for the provision of education to all children and youth residing within their borders, the role of technology has the potential to overcome myriad divides, such as those across low-income v high-income countries, rural v urban areas, stable v crisis-affected regions, in school v out-of-school children and youth, male v female learners, literate v illiterate populations, and monolingual v multilingual learners, to name just a few.

In bridging these divides, the innovations described in this report will do more than provide digital literacy skills needed to compete in the global marketplace in the 21st century. They will also do more than provide economic benefits to the participants and the societies where they are living. Through these collective efforts to reach the most marginalised and vulnerable populations and improve their educational outcomes, these interventions may also be able to reduce the sense of isolation that learners and educators working in some of the most remote and under-resourced areas might feel. By providing high quality and high utility ICT applications and programmes, they might further bolster learners and teachers' motivations to persevere despite the challenges of teaching and learning in their communities, especially when they combine high-tech and

high-touch approaches. In my own experiences, implementing a new professional development initiative for teachers working in a refugee camp in Kenya, which combines teacher training, peer coaching and mobile mentoring through WhatsApp, we have heard from teachers that the mentoring component has proven helpful in connecting them with the outside world, expanding opportunities to share teaching and learning strategies, and encouraging them to try new approaches in their classrooms and with their students.

For these and other interventions to be most effective, they need to embrace human-centred design approaches that provide meaningful opportunities for potential end-users to participate and help shape design and planning decisions. As more people enjoy expanded access to the virtual world, they also need to make sure that participants acquire digital literacy skills that allow them to protect themselves in this new space so that these interventions do not risk further subjecting already marginalised populations to new vulnerabilities.

Information and communication technologies have much to offer, but it is important to remember that they are not a panacea. There will never be a single, silver-bullet solution for overcoming the immense inequalities and inequities that governments, schools, teachers, families and learners confront every day in their efforts to provide or benefit from a quality education. Nevertheless, the promising practices and programmes captured in this report describe how different information and communication technologies can be leveraged to reduce inequities, to improve educational and livelihood outcomes, and to contribute to greater social and economic development around the world. We still have a lot to learn about what makes certain approaches more effective than others, but the opportunities to create, to test new strategies and to share lessons learned are endless and inspiring.

Connected Education

Sustainable Development Goal: Quality Education

In 2015, 193 UN Members adopted the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals. Education is one of the most powerful and proven vehicles for sustainable development and 'Quality Education' is therefore one of the 17 goals that make up the United Nation's 2030 Agenda for Sustainable Development. This goal aims to ensure that all girls and boys complete free primary and secondary

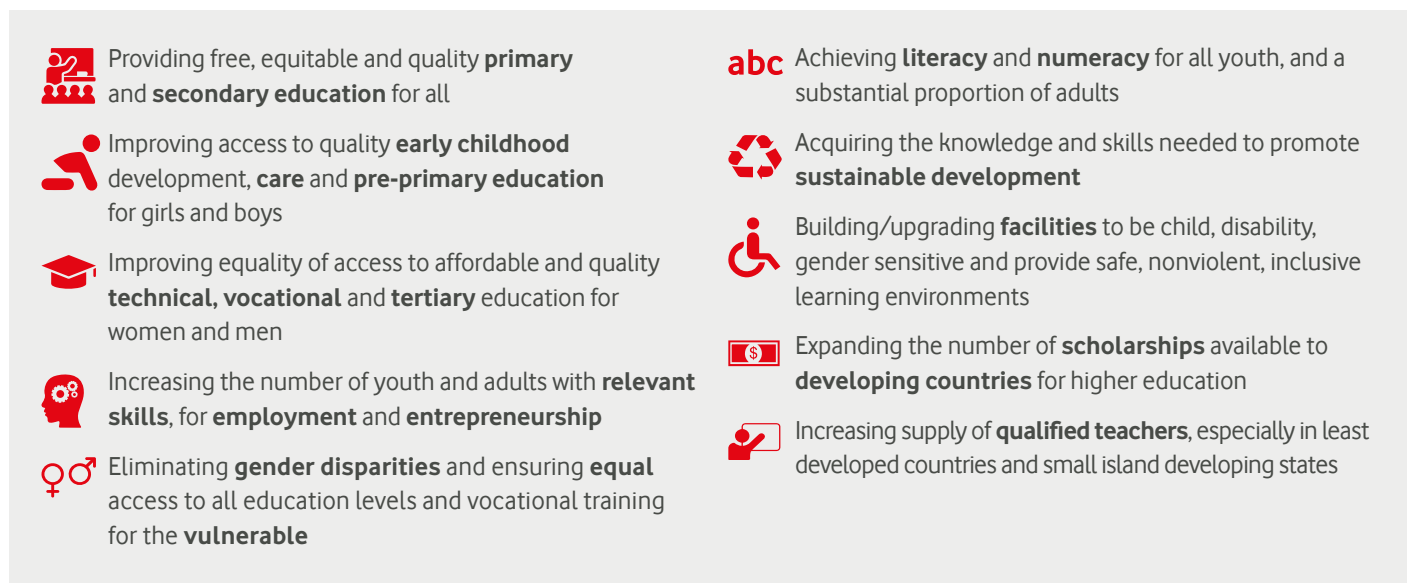
schooling by 2030. It also aims to provide equal access to affordable vocational training, and to eliminate gender and wealth disparities with the aim of achieving universal access to a quality higher education.

Ten targets were set for 2030 as part of this Quality Education goal, as illustrated in Figure 1. Education initiatives should have a special focus on these 10 targets to achieve quality education for all.

'Quality Education' is one of the 17 aspirational 2030 Sustainable Development Goals (SDGs) set by the United Nations.



Figure 1: Quality education targets in SDG Goal No. 4



Education initiatives making use of digital technologies

Technology has the power to democratise education, providing access to the best educators to those in the most remote or underprivileged communities. Education initiatives, including those sponsored by the Vodafone Foundation are increasingly using digital technology in innovative ways to help to address barriers to this access; whether that is by providing free access to education, technology to refugee camps or addressing literacy via apps.

This report aims to inform stakeholders and policymakers about the recent successes, best practice and potential of digital education initiatives to address these challenges. We have selected different Vodafone-supported and external education initiatives, grouped in four themes, to illustrate the potential.



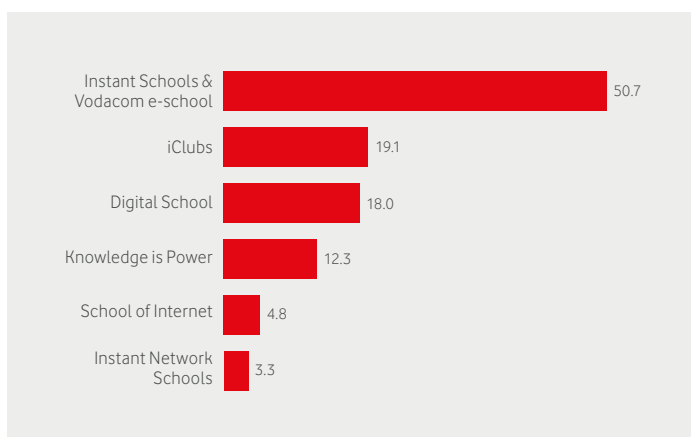
Challenges to be addressed		Education in sub-Saharan Africa	Access to quality education	Educating refugees	Closing the gender gap
Theme 1: Access to online education platforms/apps	Instant Schools for Africa	✓	✓	✓	✓
	Vodacom e-school	✓	✓		✓
	Learning Equality	✓	✓	✓	✓
	Knowledge is Power				✓
Theme 2: Teaching on digital literacy	Turkey Coding Tomorrow		✓	✓	✓
	Albania Innovation Clubs (iClubs)		✓		
	Italy School of Internet		✓		
	Hungary Digital School Programme		✓		
	WeTech		✓		✓
Theme 3: Empowering teachers	TESSA	✓	✓		
	Be Strong Online		✓		
Theme 4: Providing education in refugee camps	Instant Network Schools	✓	✓	✓	✓
	Jesuit Worldwide Learning		✓	✓	✓
	Kiron Open Higher Education		✓	✓	

Benefits observed

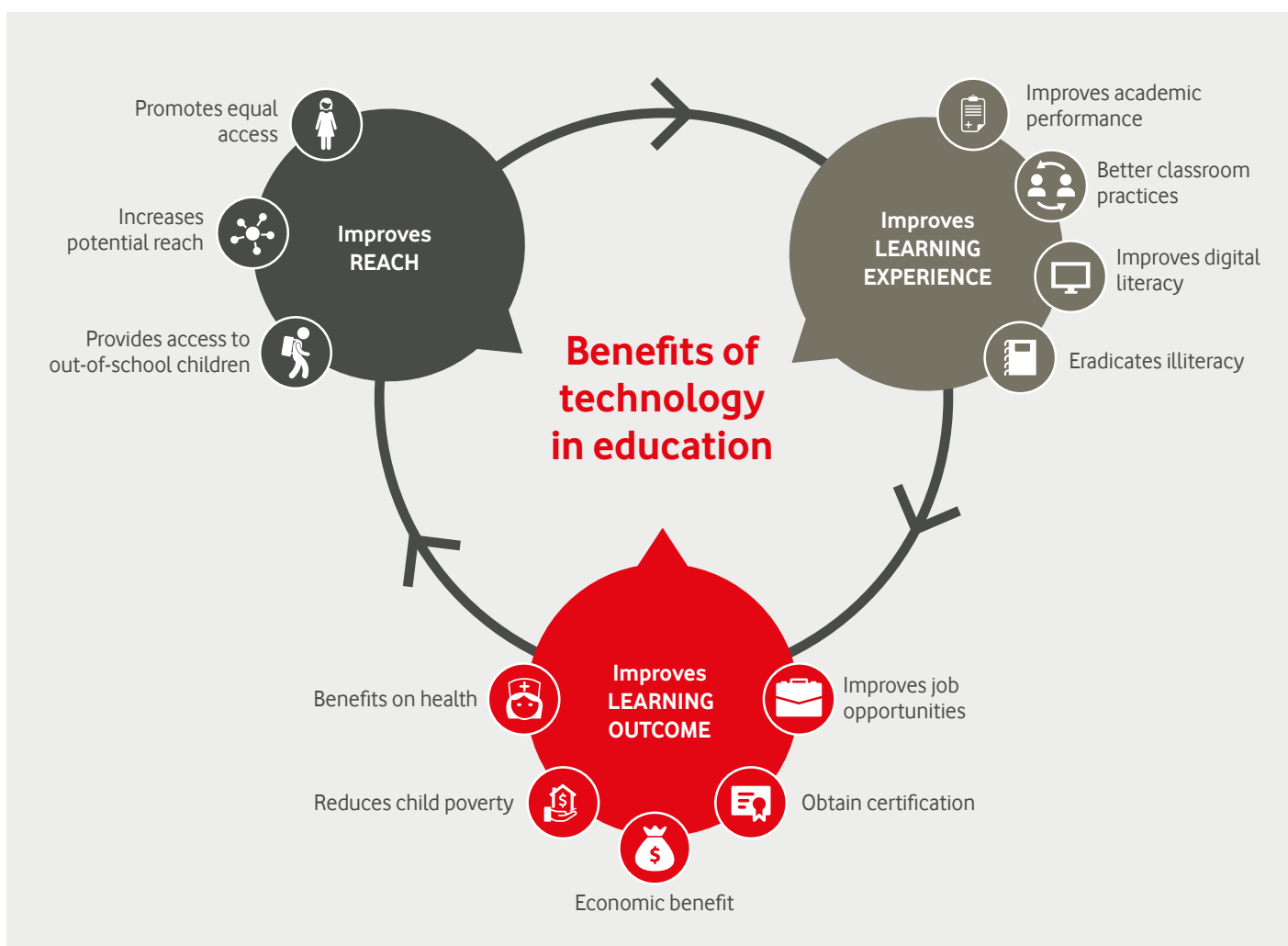
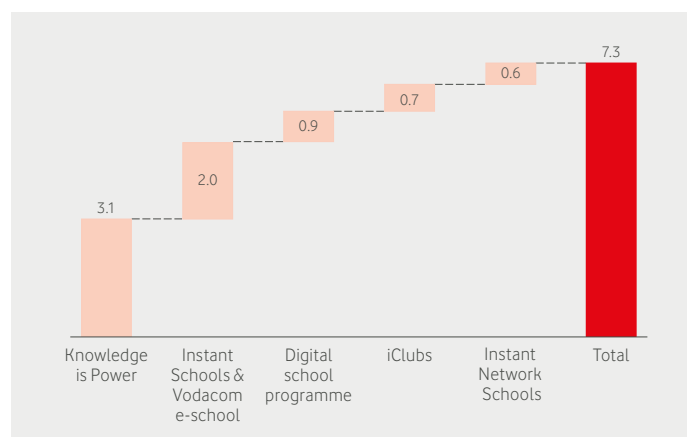
Many benefits were observed throughout the selected education initiatives, improving the reach, learning experience and outcomes, even beyond education. If they were scaled up, important benefits to economy and society could be achieved, underlining the importance of the use of digital technologies.

If the Vodafone-sponsored projects were scaled up in markets where Vodafone is already present and where the various initiatives are relevant, they could cumulatively reach more than 85 million people by 2025 (taking into account possible overlap between initiatives) and lead to annual economic benefits of USD 7.3 billion. If they were also deployed in other markets and by other parties, the benefits would be even greater.

Potential reach (million, cumulative by 2025)

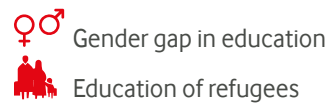
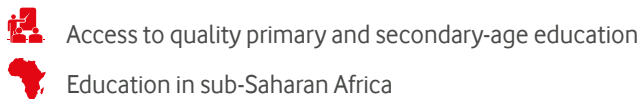


Economic benefit (USD billion, annual by 2025)



Current issues and obstacles in education

In this report we focus on the some of the greatest challenges identified to meet the Quality Education SDG:



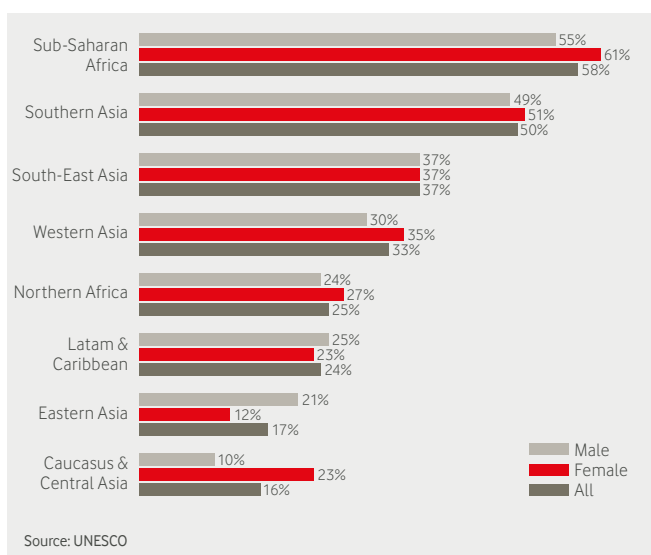
Access to quality primary and secondary-age education

Universal primary and secondary-age education is a vital part of raising living standards. Increasing rates of literacy and numeracy support growth and development and enhance employment prospects. Significant progress has been made in providing access to primary-age education worldwide but too many primary-age children still remain out of school (57 million in 2015, down from 100 million in 2000)¹. Primary-age children out of school are concentrated in a small number of countries, mostly in Africa, South Asia and South-East Asia.

While primary school enrolment has improved, quality and availability of teacher training, scarcity of textbooks and resources, and class size remain serious challenges affecting education.

Out-of-school rates for secondary education remain high in some regions (Figure 2)², with a disparity between girls and boys, particularly in sub-Saharan Africa.

Figure 2:
Out-of-school rate, upper secondary education, 2014



The global lower secondary-age (12 to 14) out-of-school rate (16% in 2014) is twice as high as the primary out-of-school rate, with the large majority of these adolescents living in sub-Saharan Africa and Southern Asia.

The out-of-school rate for upper secondary age (15 to 17) is even more alarming with 37% out of school in 2014². Of the 142 million upper secondary-age children out of school, 35 million are in sub-Saharan Africa and 45 million are in India.

While primary and lower secondary education are compulsory in nearly all countries, the same is not true for upper secondary education, with children often being of legal working age. In addition, the high secondary-age out-of-school rate is often the result of the complete lack of education during earlier childhood. In 2005 about 75 million primary-age children were out of school (i.e. one out of nine). By 2014 most of these were of secondary age and had never attended school. This highlights that while it is important to address the needs of secondary-age youth, it is essential not to divert resources from primary education².

There is a clear split in the proportion of out-of-school children between urban and rural areas in some countries with high numbers of out-of-school children. This is particularly evident for Sudan, Nigeria and Pakistan¹. Family income also plays a key role in how likely children are to attend and complete primary school. For example, in India the primary school completion rate among the wealthiest families is 97%, while for the poorest families it is only 84%³. In Nigeria 71% of the poorest primary-age children are out of school, compared to 2% of the richest and 15% on a middle income.

In addition to poverty there are many other barriers preventing equitable access to primary education, such as displacement, nomadism, disability, distance and/or ethnicity. Many children are also forced into labour by their families from an early age or are excluded because they do not speak the same language as teachers and textbooks.

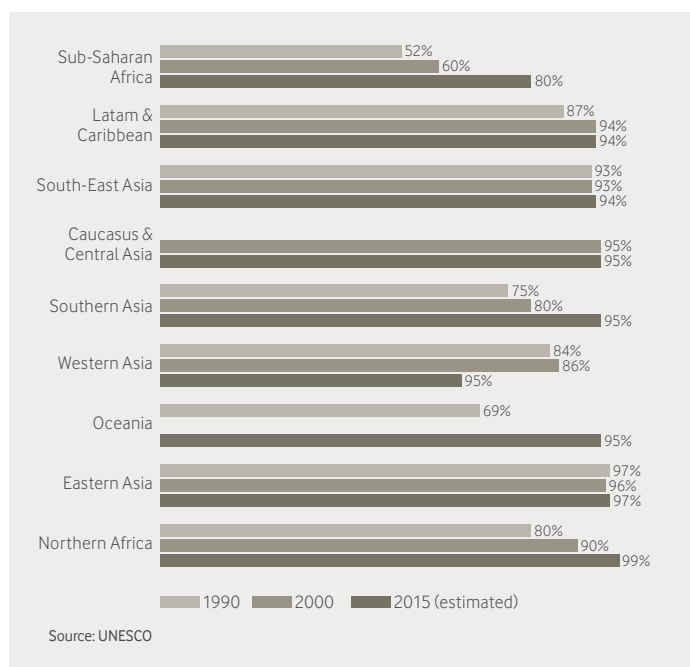
An important factor influencing dropping out of school before reaching secondary age is parental education and employment. Parental education is the single most important determinant of a youth's education outcome and the number of working adults in a household matter a great deal for schooling choices⁴.

It is increasingly recognised that the chance to improve livelihood is much greater when children (and especially girls) have access to secondary education, which remains a pain point in many geographies.

Education in sub-Saharan Africa

Sub-Saharan Africa remains the region with the biggest gap to close in securing universal primary education, with only 80% of primary-age children in education (Figure 3)⁵. Of the 57 million out-of-school primary-age children, 34 million live in sub-Saharan Africa⁶.

Figure 3: Primary education enrolment rate



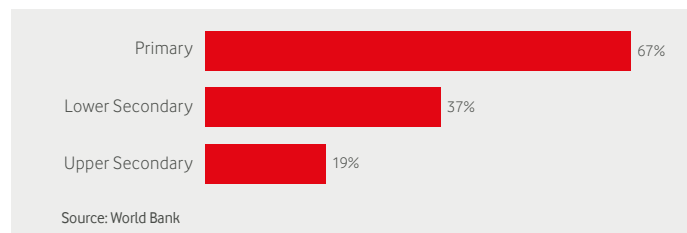
High levels of armed conflict and poverty, combined with rapid population growth, create difficulties for children in attending school. Progress has been made to improve access to education over the past decade, in part due to governments' commitment to achieve universal primary education, but learning achievements remain alarmingly low.

Transition rates from primary to secondary education remain a challenge in sub-Saharan Africa (21.2% out-of-school rate for primary education grows to 34.1% for lower secondary education). Transitions within the secondary cycle also cause significant losses (34.1% grows to 57.7% for upper secondary education)².

Low secondary school enrolment in sub-Saharan Africa is often related to broader problems in school attainment and quality. Moreover, low transition rates may reflect the increased costs families associate with secondary education related to costs

such as tuition fees and school uniforms. Secondary school often also represents higher opportunity costs as children of that age could help with household chores and even secure employment. Children are also often unable to attend a secondary school close to home. Access to secondary education in rural communities is often difficult, resulting in much lower completion rates for secondary education (Figure 4)⁷.

Figure 4: Education completion rate in sub-Saharan Africa



Other countries such as Sudan suffer ongoing armed conflicts and civil war. Combined with low levels of spending allocated per pupil (17.8% of per capita gross domestic product (GDP) for secondary-age children and 7.9% for primary-age children, compared with the sub-Saharan average of 30.1% and 11.5% respectively), this creates significant challenges in ensuring quality education.

Ethiopia has one of the lowest GDPs per capita and Human Development Index (HDI)⁸ values in the world, with a heavily rural population distribution. Although primary enrolment rates are higher than some sub-Saharan African countries, the completion rate is much lower than average for the region (41%)⁹.

Tanzania is another country where efforts still need to be made. School enrolment is relatively high but quality is poor. There is a very low pass rate and a high dropout rate between primary and secondary education. Distance from school, shortage of classrooms, shortage of learning materials, poor school infrastructure especially for people with disabilities, shortage of teachers and inadequate utilisation of ICT in teaching and learning are the main reasons for the low performance. The government is tackling these challenges by trying to improve learning environments, including provision of dormitories, electricity, water and special programmes like language of instruction improvement (English and Kiswahili) through e-learning and e-books in schools.

Finally, education in the Democratic Republic of Congo (DRC) also represents a considerable challenge. Three-and-a-half million children of primary school age are not in school, and of those who do attend, 44% start school late, after the age of 6¹⁰.

♀♂ Gender gap in education

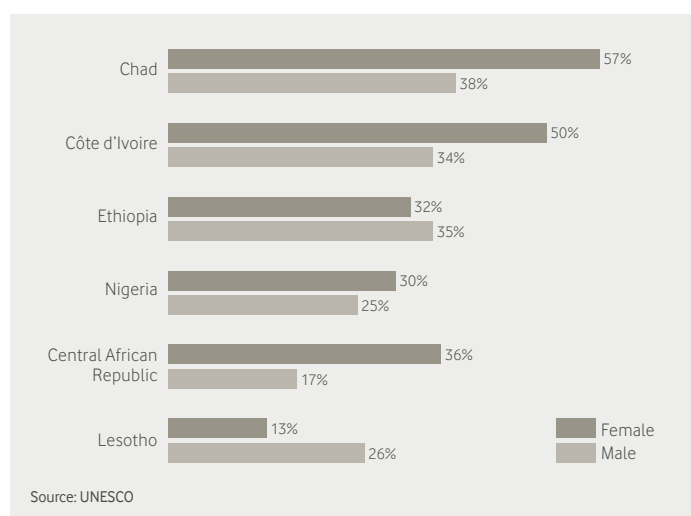
There is a significant gender gap between the proportion of boys and girls attending school at all educational levels. Twenty-three per cent of all girls and 19% of all boys are not in school, and 9 million girls will never attend school (compared to 6 million boys). According to UNESCO no country in sub-Saharan Africa has achieved gender parity in both primary and secondary education. School-related gender-based violence, child marriages and early pregnancies remain persistent barriers¹¹.

The fall in the number of out-of-school girls is not distributed evenly – there are still regions and countries where a significant gender imbalance exists. The gender gap is highest in percentage terms in Western Asia and Oceania. While the disparity is less marked in sub-Saharan Africa, over half of all out-of-school primary age girls are in this region – 3 million more girls than boys of primary school age are out of school.

Research shows that gender disparities in school enrolment are more apparent as education levels increase¹². Twenty per cent of girls of lower secondary age in Western Asia are out-of-school, compared to only 13.1% of boys. In sub-Saharan Africa secondary out-of-school rates are significantly higher for females¹², which has a direct impact on child malnutrition, child death, adolescent pregnancies, child marriages and female employment levels¹³.

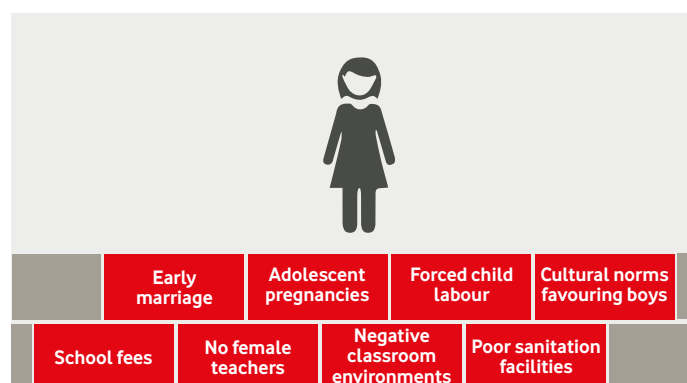
Research shows that gender disparity is often far wider among the poorest children than the richest. Countries where gender disparity was high in primary education in 2000 have experienced significant progress. Countries where disparities have emerged since 2000, however, show an inverse trend where the poorest boys are less likely to complete primary education than girls¹².

Figure 5: Out-of-school lower secondary-age children



There are numerous barriers to girls' education around the globe, ranging from negative social norms to supply-side constraints that education initiatives should address, as illustrated below¹².

Figure 6: Girls' education barriers



Key strategies and policies have been laid out to increase engagement with gender issues in education, ranging from international campaigns and coordination, as well as policy frameworks and budgets to support progress in girls' education. Awareness of the socio-economic value related to girls' education must be improved through global, national or community mobilisation campaigns¹².

Efforts should also focus on improving access and removing barriers to girls' education to tackle gender disparities, as illustrated in Figure 7¹².

Figure 7: How to improve access for girls





Education of refugees

Refugees face considerable challenges in obtaining access to education, even compared to children in developing countries. There are estimated to be 6 million school-age refugees in the world today, of which 86% are in developing regions¹⁴. Of these children, only 2.3 million are estimated to have access to schooling.

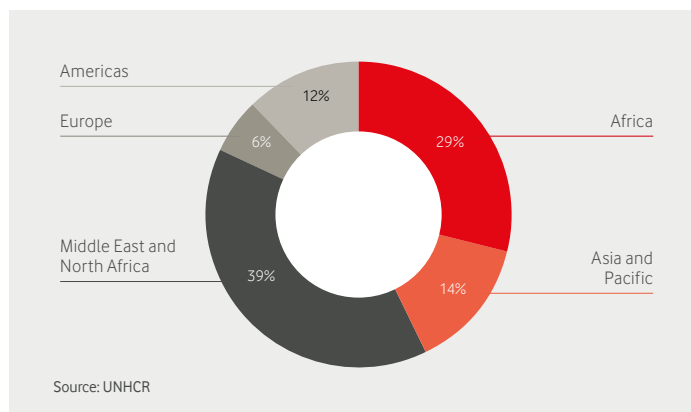
At primary age, only 50% of refugee children have access to primary education, compared to over 90% of children in most other regions. The difference is even more marked at secondary education level, where only 22% of refugee children attend lower secondary school¹⁴.

Accurate demographic data on refugees, particularly children, is understandably sparse. Globally, around 50% of refugees were estimated to be under 18 in 2014. Six countries host over 7.5 million refugees. Many of these countries are already struggling with providing sufficient primary age schooling to their own populations – the strain of additional children can be difficult for governments to cope with. The effects of war and armed conflict on children's school attendance are dramatic – in 2009, 94% of Syrian children attended primary and lower secondary school. By June 2016, this had dropped to 60%. Over 2 million Syrian children no longer have access to education. Of the approximately 1.7 million school-age refugees from Syria, an estimated 900,000 are not in school.

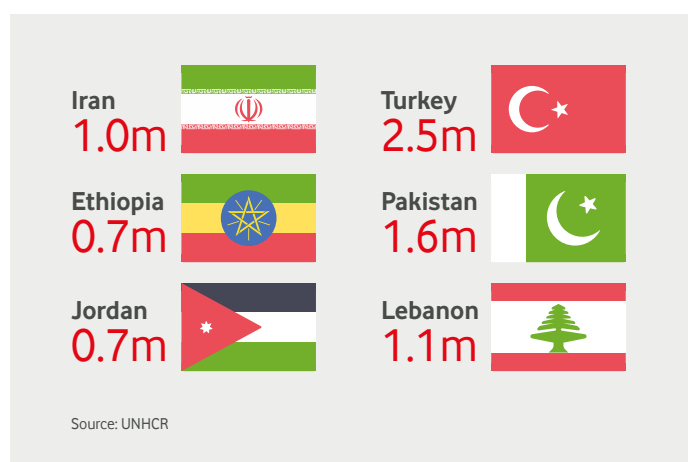
Education provision for refugees remains under-resourced, and as a result requires specific actions and approaches to meet the goals of the 2030 Agenda for Sustainable Development.

Figure 8: Out-of-school primary and secondary-age children

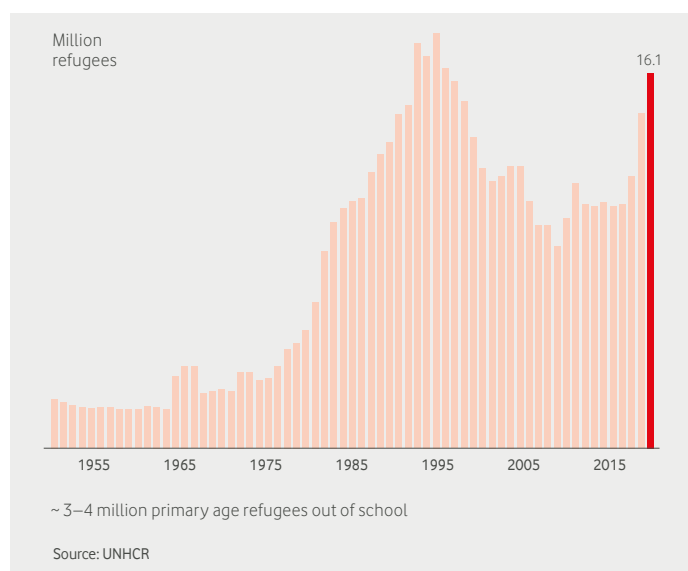
Where the world's displaced people are being hosted



Over 7.5 million refugees in the top six host countries



16.1 million refugees, over half of whom are under the age of 18

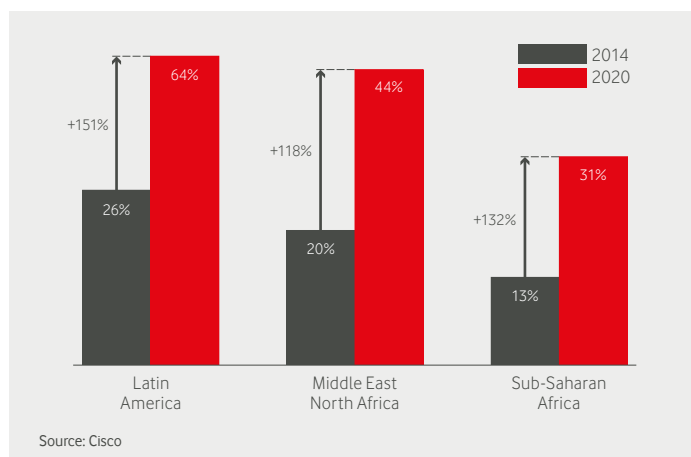


Education initiatives making use of digital technologies

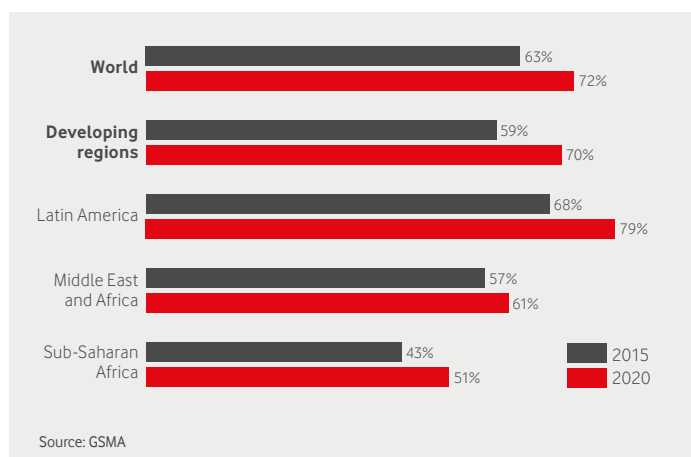
Digitalisation of education is a trend that is already well under way as traditional methods of learning and teaching are increasingly being replaced or enhanced by digital technologies. This paradigm shift is not only the result of digitalisation of the industry but also partly a response to increasing costs of education and the accompanying inefficiencies¹⁵.

Access to connectivity and technology plays a vital role in enabling new education opportunities. Mobile communication services will continue to be particularly important to create opportunities for disadvantaged population groups with low income or status, especially in emerging markets. Smartphone ownership is expected to continue to grow, thanks to the introduction of low-cost models and is forecast to more than double by 2020 in Africa, Latin America and the Middle East. Mobile data usage is also expected to grow significantly in developing regions, driven by demand of more data-hungry services and affordable access.

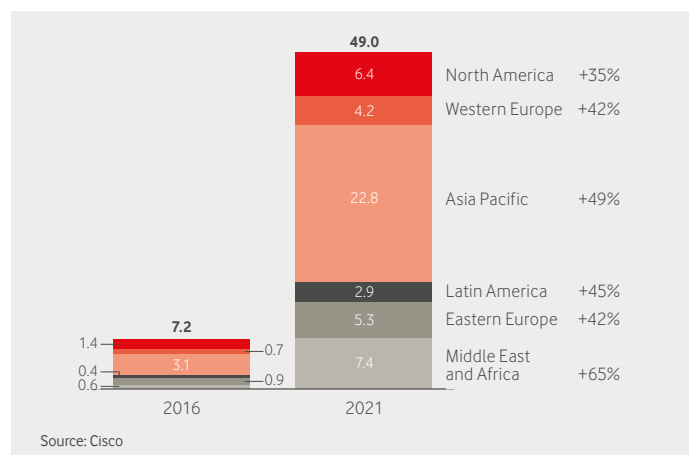
Figure 9: Smartphone and mobile data growth
Smartphones as percentage of handsets



Unique subscriber penetration by region



Mobile data traffic forecast (TB per month)



This represents an important opportunity as mobile technologies can enable, support or enhance access to education. It has been widely accepted that devices with mobile connectivity improve learning and engage students and teachers, leading to a variety of benefits, including the real-time assessment, increased innovation, and the empowerment of women and disadvantaged population groups. An important gap remains to be bridged, however, in terms of urban-rural investment disparities. An individual living on a low income in a densely populated area will have better access to mobile internet services and hence educational services than their counterpart in a rural area, underlining the importance of investment in coverage also in areas where the commercial case is challenging for operators.

Access to education enabled by communications technology will reduce information asymmetries and equalise access to wider social networks and opportunities. Those with a higher level of education are not only more digitally literate, they are likely to more easily recognise the value of access to new sources of information and be better equipped to take advantage of it. Education can therefore be the real driver of mobile broadband take-up and depth of use.

Education not only drives take-up of smartphones, but also increases the level of sophistication with which they are used¹⁶. There are therefore positive benefits that result from education in terms of maximising the use of smartphones for other purposes, for example, for business and entrepreneurial activities, for social connections, and access to information and current affairs. Broad educational opportunities will have a disproportionately beneficial effect on those groups, such as women, who otherwise may be left behind in a digital world.

In the following sections, we have selected different Vodafone-supported and external education initiatives that have a special focus on communications technology, used in innovative ways to help address barriers to access education. We describe each of the initiatives, including the opportunity addressed and the potential societal benefits.

Theme 1

Access to online education platforms/apps



Access to educational materials remains one of the most important barriers to achieving universal quality education today. The lack of access is preventing millions of people from escaping the cycle of extreme poverty around the world.

By the end of 2014, around 263 million children and youth were out of school, of which 61 million children of primary school age (6 to 11 years), 60 million of lower secondary school age (12 to 14 years), and 142 million of upper secondary school age (15 to 17 years)². The majority of these out-of-school children are typically the poorest, living in countries in conflict and rural areas. Progress has been made and governments are addressing this problem by abolishing school fees and making attendance mandatory, but other barriers still prevent many children from access to education (e.g. distance, opportunity cost, uniforms, exam fees).

Moreover, for children who have access to education, the issue of 'quality' still needs to be addressed. In many disadvantaged communities, the educational materials available such as school books are limited and often not sustainable (no proper storage, rapid deterioration, insufficient materials for number of students) and teachers have to revert to very traditional teaching methods ('chalk and talk').

In order to address the challenge of access and to ensure quality of educational materials, many educational initiatives are focusing on online educational platforms and apps, targeting both in-school and out-of-school children. These platforms provide access for both children and teachers to educational content, the quality of which is ensured by a central organisation, aligned with national curricula. Moreover, these platforms enable individualised learning and can accommodate to the learner's individual pace or preference of learning method. They also enable interactivity and stimulate engagement of students as opposed to being passive consumers of content, which proves to have direct benefits for motivation and learning results¹⁷.

“

Providing access to online education material through online platforms/apps presents a particular benefit for women and girls who are not able to attend school because of biological needs. These initiatives have the potential to improve understanding on women related issues including Sexual and Reproductive Health Education (SRHE). ”

Hon. Eng. Stella Martin Manyanya,
Deputy Minister of Education, Tanzania

Vodafone – Instant Schools For Africa

Providing free access to digital educational content



Several pilots launched and **wide-scale deployment planned in 2017**



Helping children **not in traditional schooling** as the service is available on **basic mobiles for free**



Supporting government strategies to **increase literacy and numeracy skills**

UNESCO research found that 263 million children aged 6 to 17 were out of school in 2014, with 93 million of those children living in sub-Saharan Africa. Moreover, for children who are in school, access to quality education remains problematic in developing regions. To address these issues, Vodafone Instant Schools For Africa aims to provide millions of young people in Vodafone African markets with free access to online learning materials.

Key features

- ▶ Includes video/interactive exercises, optimised for basic mobile devices and low bandwidth
- ▶ Free to access – both content and data
- ▶ Targets young students from primary to secondary education (5–18 years old)
- ▶ Provides content in local languages mapped to local curriculum (in progress)



The Instant Schools For Africa initiative will launch in 2017, providing millions of young people in South Africa, the Democratic Republic of Congo (DRC), Ghana, Kenya, Lesotho, Mozambique and Tanzania with free access to online learning materials. These materials were developed in conjunction with Learning Equality – a leading not-for-profit provider of open-source educational technology solutions – and with educational partners, ministries of education and local education experts in each country.

The Instant Schools For Africa programme represents a significant expansion of the Vodafone Foundation's ongoing mission to use digital and mobile technologies to bring critical educational resources to the people who need them most. The educational resources provided under the programme will include subjects such as maths and science, with content comparable in quality, range and depth to those available in schools in the developed world. Initially, the high-quality global content will be provided by

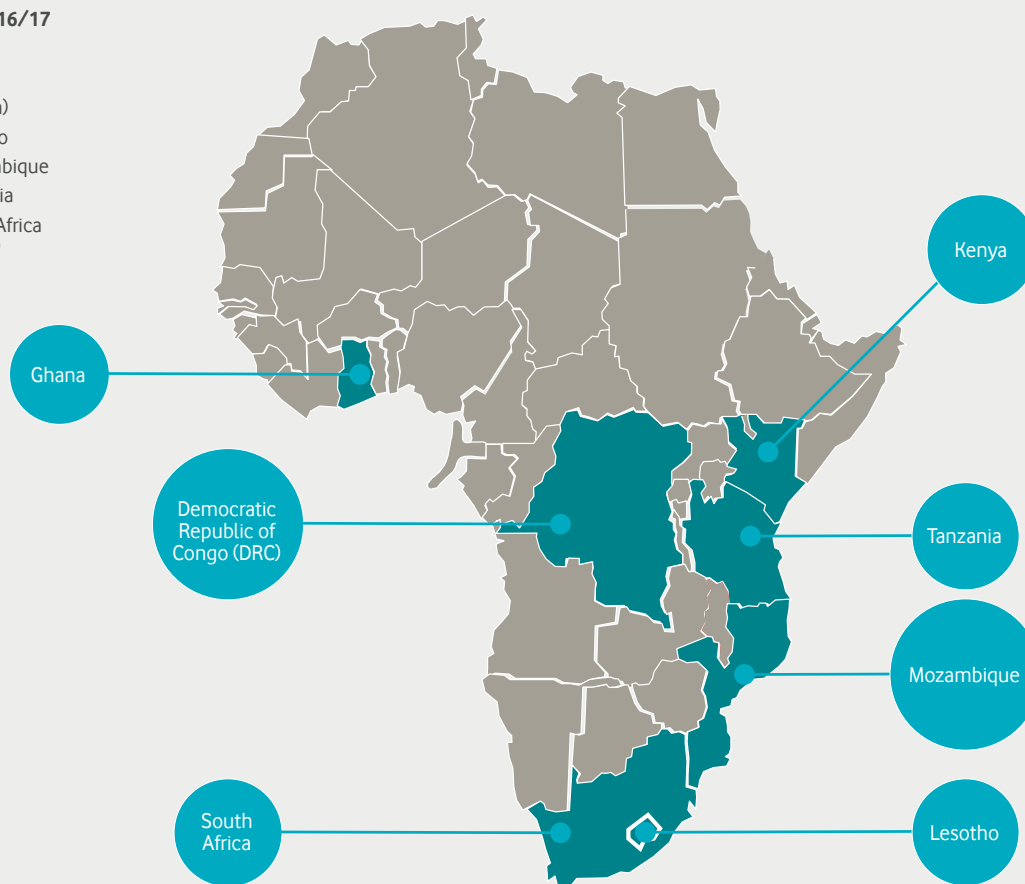
Khan Academy. The intention is to curate the content to align with the national local curricula.

Learners and teachers who are customers of Vodafone or its African subsidiaries will not incur any mobile data charges when accessing the Instant Schools For Africa educational resources online. They will simply need a data connection to the Vodafone network.

The programme draws from a combination of the best openly licensed global and local educational resources to provide country-specific content. It aims to increase accessibility by optimising educational content for simple, low-cost mobile devices with basic data connectivity (3G) and for areas of low coverage/capacity. The Vodafone Foundation's goal is to maximise impact; to this end, it is committed to provide other mobile operators with the technical specifications required to extend the benefits of this philanthropic programme to the largest possible number of beneficiaries.

Deployment 2016/17

Vodacom DRC
 Vodafone Ghana
 Safaricom (Kenya)
 Vodacom Lesotho
 Vodacom Mozambique
 Vodacom Tanzania
 Vodacom South Africa
 (Launched 2015)



Case studies

Ghana

A pilot version was launched in November 2016 in Ghana, providing free access to KA Lite. Vodafone Ghana has been responsible for public communications, local technical support for managing the portal and the on-ground activations of local communities. The project is collaborating with Learning Equality, who have created the platform and also provide the open source content drawn from Khan Academy.

As in Tanzania, learners will only need to have access to a mobile device, tablet or laptop and use Vodacom Network for connectivity. There are ongoing conversations with Ghana Education Services to include local curricular content on the portal for the bespoke needs of Ghanaian students. Schools can also use the content on an offline basis.



Tanzania

The initiative will be launched in 2017 in Tanzania. The programme is currently collaborating with Camara Education, a non-profit international organisation dedicated to inspire and empower a young generation to improve life opportunities. Camara is a registered charity in the US, Ireland and the UK. It currently operates five Education Hubs in Africa – Kenya, Tanzania, Ethiopia, Zambia and Lesotho – and one in Ireland. All Hubs operate as social enterprises to serve local market needs through a sustainable business model. Their role is to translate the content into Kiswahili and map the translated content to the Tanzanian Education Curriculum so that it is easy to use and relevant to the user while still providing world-class resources.

The programme anticipates that around 11,000 students will participate in year one. Students will only need to have access to a mobile device, tablet or laptop and use Vodacom Network for connectivity. The objective is to provide free educational content to students from underprivileged backgrounds in order to improve literacy rates and class performance.

Vodafone South Africa – Vodacom e-school

Providing free access to education content



215,000 learners
registered on the portal



Targeting **learners**
in grades R to 12 across
all of South Africa



Access to **quality education**
for Vodacom customers
with **no data charges**

For many learners in developing markets, quality education is not always easily accessible. Vodacom's e-school in South Africa aims to provide learners from grade R (age 5) to grade 12 (age 18) with access to free quality education at any time and from any place through a smartphone, tablet or computer.

Key features

- ▶ Open to all children from grades R to 12 (ages 5–18)
- ▶ Close to 3,000 connected schools
- ▶ National coverage across South Africa
- ▶ Grants offered to study in fields where there is a skills shortage

Vodacom e-school is a secure online learning platform with free access to basic educational content for all grade R to 12 learners in South Africa. The portal offers daily lessons, consisting of notes, videos and assignments in the form of quizzes, as well as personalised progress reports, providing students with the opportunity to self-learn, self-assess and complete online tests.

The main partner of this project is the Department of Basic Education (DBE). The DBE endorsed the portal and is responsible for approving the content. Furthermore, Vodacom has acquired additional content from its partners Mindset (an educational solutions provider) and Siyavula (an educational technology company). The programme also leverages Vodacom's 'digital classroom', a digital portal for teachers.

The goal of Vodacom e-school is to provide access to free, quality digital content and enable teachers and learners to access the content anytime and anywhere. As of February 2017, a total of 215,000 learners had registered to the portal. Around 15,000 students register every month, with this figure expected to increase in the future.

To ensure that teachers would also make use of the online platform, Vodacom equipped and connected 91 teacher training facilities around South Africa that operate in conjunction with the

DBE. Around 100,000 teachers have been trained in the use of ICT at these centres, and encouraged to use the platform to access educational material for their classes.

The portal was launched in January 2015 and Vodacom has committed to investing more money to grow its footprint. The Vodacom Foundation is responsible for hosting the portal and its maintenance while Vodacom provides the data connection free of charge.

The educational content is being rolled out in English but also local languages (e.g. isiZulu, Afrikaans, isiXhosa) as learners assimilate concepts easily and better in their mother tongue. In addition, there are ongoing discussions regarding adding more content and rich media sets to the platform to make the platform more attractive.

Unlike many web resources, Vodacom e-school content is based on the South African curriculum. Subjects currently available include maths and maths literacy, physical science, life science, accounting and English. It has a national presence as learners can register anywhere in the country, as long as they have a phone, laptop or tablet with internet access.





Vodacom offers bursaries to 50 students annually to study in fields in which there are skills shortages. Top achieving students from disadvantaged communities are selected to continue their studies in the ICT and engineering sectors. In addition, Vodacom in partnership with CISCO offers ICT skills training to unemployed youth at 10 teaching centres. Vodacom has also partnered with Microsoft to provide digital literacy training to teachers, community members and unemployed youth. This training is

done by Microsoft interns. Vodacom in partnership with Huawei and publishers has equipped 81 teacher centres with e-readers to support the Department of Basic Education's programme of e-libraries.

Vodacom e-school is zero-rated, which means that Vodacom customers are not charged for the data consumed while using e-school (Vodacom incurs all costs for the data charges). Non-Vodacom customers are charged normal rates.

New – Grades R to 3

Available in all 11 official languages and fully CAPS* aligned, all the workbooks and posters you need to help your child get the most out of their education



Numeracy
(Grade R)



Literacy
(Grade R)



Life Skills
(Grades R-3)



Mathematics
(Grades 1-3)



Home
Language
(Grades 1-3)



First Additional
Language
(Grades 1-3)

Grades 4 to 12

All the CAPS* aligned content you need to get the most out of your education



History



Geography



English Home
Language



Afrikaans
Huistaal



Afrikaans Eerste
Addisionele Taal



Mathematics



Life Sciences



Physical
Sciences



Mathematical
Literacy



Ergonomic
Management
Science



Social
Science



English First
Additional
Language



Accounting



Natural Science

*CAPS = Curriculum Assessment Policy Statements

The opportunity



Potential to **reach 50.6 million children** across Vodafone's African operating countries and India by 2025



USD 2.0 billion annual economic benefit by 2025 through higher income as result of education



Aim to support **11% of out-of-school children by 2025**



Conventional teaching materials such as textbooks, past examination papers, assessment worksheets and classroom aids are prohibitively expensive for many African schools.

Digital learning materials provided via mobile networks – with basic tablets for pupils and a laptop and projector for educators – offer a cost-effective alternative. For this reason, there is a large potential market for programmes like Instant Schools For Africa and Vodacom e-school.

When looking at all African countries across the entire Vodafone footprint and India, we found that 28% of the total population are school-age children. This represents a total of 475 million children, of which 75 million are out of school, both of which could enjoy substantial benefits if they had access to a quality education through modern internet tools.

Potential reach

Our modelling found that if initiatives like Instant Schools for Africa and Vodacom e-school were widely deployed across Vodafone's African markets and India, it could potentially reach 50.6 million school-age children by 2025, the majority of which would be in India (37 million), the Democratic Republic of Congo (3.0 million), Egypt (2.6 million) and Kenya (1.7 million).

Economic benefits

An increase in access and quality of education as well as increases in literacy leads to better job opportunities. Our research shows that initiatives like Instant Schools and Vodacom's e-school for Africa could generate an annual economic impact of USD 2 billion by 2025, as better-trained youngsters enter the job market.

Better outlook and benefits to health

This programme could successfully support 11% of out-of-school children by 2025, providing a beacon of light to those who need it the most. Moreover, numerous reports have indicated consistent and significant associations between formal educational attainment and individual health outcomes. The vast majority of these reports conclude that more highly educated individuals are healthier and live longer¹⁸.

Looking ahead

This initiative could be extended to cover other neighbouring or similar ranges, as well as other geographies. Working in partnerships with NGOs and industry players is essential to scaling out the programme, especially to supplement the resources and funding needed. The main prerequisite is that the content provided on the platform must be of a high quality, align to the national curriculum and be provided in the local language.

Vodafone will ensure that all content which is mapped and translated will also be available for any schools to use on an offline basis.



Education is a powerful antidote to poverty. Children and young people in some of the poorest countries on earth are desperate to learn but parents, teachers and other educators often lack both means and materials to teach them. Mobile and digital changes everything. Our Instant Schools For Africa programme will put a wide range of advanced learning materials – tailored for each local language and culture – into classrooms everywhere, from city slums to remote villages. We believe Instant Schools For Africa could transform the life chances for very large numbers of young people.

Andrew Dunnett, Director, Vodafone Foundation

Learning Equality

Bringing the online learning revolution offline



Open-source platform KA Lite has been installed in **over 175 countries and territories**



Reaching around **4.3 million learners**



Providing access to Khan Academy's **9,000+ videos and 38,000+ exercises**

About 52% of the world still lacks internet access. Countries with the least internet access are the same countries with the least access to quality education. Learning Equality is bridging the digital divide by providing open educational resources around the globe via low-bandwidth and offline channels.

Key features

- ▶ Focuses on schoolchildren in grades 4–12 with limited resources and low teacher training
- ▶ Special emphasis on Latin America, Middle East, sub-Saharan Africa and South Asia
- ▶ Raising USD 5 million by 15 December 2017

Learning Equality is an early stage social impact initiative that builds and supports open-source educational software designed to increase learning opportunities for communities with limited or no access to the internet. The company is committed to enabling every person in the world to achieve a quality basic education, through supporting the creation and distribution of open educational resources, and facilitating their use inside and outside classrooms around the world. Through this work, Learning Equality aims to build a new, open and fundamentally human-centred educational model that promotes human flourishing.

KA Lite, Learning Equality's open-source platform for viewing and interacting with Khan Academy's education videos and exercises, was launched in 2012. It provides local, offline access to Khan Academy's 9,000+ videos and 38,000+ exercises, while retaining interactivity, instant feedback, gamification and coach dashboards.

KA Lite has now been installed thousands of times in over 175 countries and territories, reaching an estimated 4.3 million learners in contexts as varied as low-income schools in India, orphanages in Cameroon, prisons across the United States, refugee programmes in Lebanon, and First Nations community centres in northern Canada. The Learning Equality team continues to support and improve KA Lite and enable deployments around the world.



Learning Equality is able to leverage its reach and impact by working with content partners (e.g. Khan Academy, TESSA, PhET Interactive Simulations), hardware partners (e.g. Google, SanDisk) and implementation partners (e.g. UNCHR, UNICEF, FUNSEPA).

Learning Equality receives funding and collaboration from various organisations. These include the Vodafone Foundation, which has enabled free, zero-rated access to educational materials as part of the Instant Schools initiative, the Hewlett Foundation and Google.org.

KA Lite is Learning Equality's first generation platform and can be used even when no internet is available. The educational material is downloaded onto a local server in a classroom at the outset. It can then be accessed by the students through a laptop, tablet or desktop computer. The programme can also be installed directly on a learner's computer for portable access. The only time an internet connection is needed is for the initial download (either to the server or the student target device, or to a USB stick that can then be carried or mailed), after which it can be accessed as many times as needed without internet.

With the launch of KA Lite, learners around the world are able to take ownership of their learning and experience the benefits of personalised instruction in an offline setting. Students can pause and re-watch videos when necessary to better understand concepts and skip ahead if topics are too easy. Coaches can use the coach report feature to identify areas of student weakness and pair students of varying levels to engage in peer-to-peer instruction.

Kolibri, an application in development, is Learning Equality's updated response to educational inequality. Kolibri is open source, and built to enable seamless authoring and peer-to-peer sharing. It engages users with educational content, without the need for internet. Learning Equality is working to combine a vast library of educational content from sources all over the web, and will make the content available completely offline, on low-cost devices. Instructors and organisations will be able to create locally relevant customised educational curricula that fit their regional context, by open content and materials they create themselves.

Learning Equality recognises the importance of teaching in addition to merely providing access to educational material, which is why they have provided teachers with just-in-time tools within Kolibri to assist with their teaching in response to how students are interacting with Kolibri in real time. Additionally, in the past, KA Lite has been used by teachers themselves for professional development and they anticipate a similar use for Kolibri.

Learning Equality is currently in the process of raising USD 5 million by 15 December 2017. This funding will support Kolibri's product development (to help meet critical user needs), content partnerships (to expand range of available materials), support for deployments (to reach high-need learner audiences) and implementation research (to understand effective strategies).



Common use cases



Schools



Orphanages



Refugee camps



Out of school



Prisons

Photography:
Thomas Van Den Driessche

The opportunity



Potential to reach
100 million learners
by **2030** around the world



Potential to **improve maths levels**
by **14%** and **creative skills**
by **36%** for participating students



At a prison in Idaho, USA
20 out of 20 prisoners using Khan
Academy **passed their GED**



Over the past years, the ‘online learning revolution’ generated a lot of excitement as it enables broad, free access to education opportunities.

However, around 52% of the world (3.9 billion people) who could benefit the most from this tremendous opportunity lack the connectivity needed to access online learning materials¹⁹. For this reason, Learning Equality, by providing access to education materials offline, has the potential to provide substantial benefits for individuals, families, communities and whole economies.

Potential reach

With KA Lite, Learning Equality has been reaching over a million learners per year. With Kolibri, the organisation aims to expand its reach, through strategic initiatives and with the incorporation of a more diverse and locally relevant content base, aligned to state standards. Its goal is to have reached over 100 million learners around the world by 2030, and to reach an additional 10 million learners every year.

Improved school performance

Bibliothèques Sans Frontières conducted a 3 month impact evaluation study of KA Lite with 5th graders in Yaoundé, Cameroon. At the end of the 3-month tutoring period, the students’ maths levels (+14%) and creative skills (+36%) improved substantially compared to a control group. Furthermore, these students report a higher self-confidence and stronger inclination to learning mathematics than students in the control group²⁰.

An independent evaluation of a FUNSEPA pilot programme in Sacatepéquez (Guatemala) found that combining technology with Khan Academy produces a 10% increase in maths performance.

Better outlook

At the Idaho Department of Correction, the feedback from staff and offenders using KA Lite has been overwhelmingly positive. Among the first 20 prisoners using Khan Academy exercises offline, all 20 passed the maths portion of their GED course – the first time that had ever happened.

Looking ahead

A universal education means that anyone, anywhere – online or offline – can access it. Learning Equality’s early success has come after the initiative realised the potential emerging out of three converging trends: the explosion of high quality, openly licensed educational content; low-cost computing; and, sneaker net sharing (content and software distribution through USB sticks or other portable devices).

Funders are understandably sometimes hesitant to fund a group before it has proven itself, but this can lead to a ‘catch 22’ situation as producing a proof of concept and gathering evidence when resources are limited is a challenge. For this reason, funders should support early stage projects and connect the funded groups with mentors and partners to help them get off the ground. This way programmes such as Learning Equality could provide the much needed access to learning materials to support those falling behind.



One of Learning Equality’s core values is being proactive. The internet will take the longest to get to the people who are most left behind. If we can find a way to bring education to these communities now, they will be ready when global connectivity does arrive, so that they won’t be left behind for whatever iteration of inequality exists in the coming decades.

Jamie Alexandre, Executive Director, Learning Equality

Vodafone Egypt Foundation – Knowledge is Power

Eradicating illiteracy through mobile learning



480,000 learners
enrolled in classes



70% of those who
complete the course
are **women**



Graduates take **3 to 6 months**
of classes and a final exam
provided by GALAE²¹

In Egypt, one in three women is unable to read and write, which is reflected in the country having one of the lowest female labour participation rates in the world²². Now through the Knowledge is Power programme, mobile technology is opening up new opportunities for women in Egypt to learn in a way that suits them.

Key features

- ▶ Projects are run by local NGOs
- ▶ Targets learners aged 15 years old and above
- ▶ Covers the entire country (27 governorates)
- ▶ Used as a tool for children to learn how to read and write in an interesting way through a mobile app



The Vodafone Egypt Foundation, through its initiative Knowledge is Power, aims to support the national efforts in the field of illiteracy eradication by mobilising the efforts of civil society organisations and employing mobile technology to address this development challenge. This programme was launched in association with Egypt's General Authority for Literacy and Adult Education and local NGOs.

One of the key components of the project is the Vodafone Literacy App. This free mobile application (app) uses pictures and a talkback function to make learning easier and more flexible. It can be downloaded onto any Android smartphone, Nokia smartphone, IOS iPhone and some feature phones and enables women to learn at home, in their own time and around other commitments. The app is used in combination with local classroom sessions run by trained volunteers and classroom facilitators.

Since its launch in 2011, more than 360,000 people have completed the programme, of which 70% are women, in a country where an estimated 32% of the female population are unable to read or write. The Knowledge Is Power programme has a particular

focus on helping illiterate women learn to read and has so far reached around a quarter of a million women who missed out on education when they were younger.

The goal of the initiative is to use classroom and mobile learning to improve literacy skills, and help remove a major barrier to individual empowerment, economic growth and democratic participation in Egypt. The flexibility of mobile-based learning, which can take place anywhere and anytime, and classes held in easy to access locations, has seen the programme attract huge interest from women who want to improve their literacy skills.

The Vodafone Group Foundation and Vodafone Egypt have been the main contributors of funds for the Knowledge is Power initiative. Furthermore, the programme has received in-kind contributions from several partners, including GALAE (providing material and trainings to the teachers), Rotary (providing vocational training to the beneficiaries post their graduation and supporting them in marketing their products) and CEOSS (providing hygiene awareness).

As part of its efforts to take advantage of the advanced technology in eradicating illiteracy, GALAE signed a protocol with Vodafone Egypt Foundation that resulted in designing a review and accreditation programme for the M-curriculum. The project is aimed at enhancing the Literacy App curriculum to the level that becomes equivalent to other accredited curricula for literacy.

The project aims to make the process of learning more modern and engaging. It is open to all, but is particularly focused on solutions that help women overcome some of the barriers they face to improving their literacy skills. For example, while the Literacy App enables women to learn at home, classroom sessions are held in venues accessible to women, such as local community centres, schools, mosques, churches and even the homes of many

volunteer teachers in remote villages to allow flexible and collaborative learning. Many of the youth volunteer teachers and facilitators are women.

The Knowledge is Power project is implemented by three Egyptian NGOs: the Life Makers Foundation, the Coptic Evangelical Organization for Social Services (CEOSS) and Rotary Egypt. Their strong local presence enables them to connect with and enrol harder-to-reach women, including those in remote rural communities. The NGOs also recruited the teaching volunteers, many of whom are recent university graduates. They run training workshops to build the skills of facilitators and supervisors in the literacy curriculum and one-week camps to train the volunteers on literacy education techniques.

The opportunity



Potential to reach
12.3 million women by 2025
in Africa and India



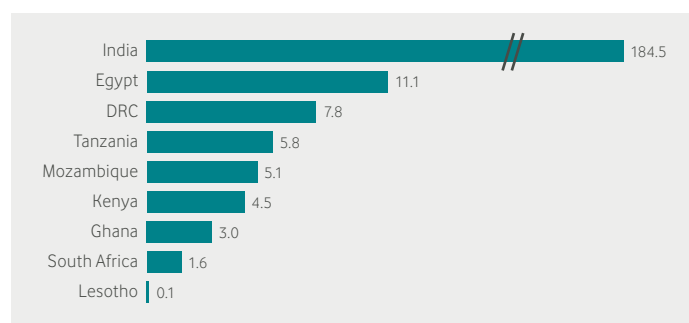
4.1% increase in adult female literacy by 2025
in Africa and India



USD 3.1 billion annual
contribution to GDP by 2025
as a result of education

Improving adult literacy skills and ensuring that the next generation of women learn to read and write will have significant benefits for individuals, families, communities and whole economies. There is a large potential market for programmes like Knowledge is Power, with an estimated 39 million illiterate adult women living across Vodafone's markets in Africa and 184 million illiterate adult women living in India.

Figure 10: Illiterate adult females across Vodafone's markets in Africa and India (millions)²³



Potential reach

Our modelling found that if initiatives like Knowledge is Power were deployed across Vodafone's markets in Africa and India, they could reach 12.3 million women by 2025. The majority of women reached would be in India and Egypt, followed by the Democratic Republic of Congo (DRC) and Tanzania, who have the largest number of illiterate females across Vodafone's markets (adult female illiteracy rates are estimated at 41% in India, 37% in DRC and 64% in Mozambique²³).



Improved literacy

The programme could successfully support literacy for an estimated 9.2 million women by 2025 (assuming some women will not complete the programme), leading to an estimated improvement of the female adult literacy rate of 4.1% across Vodafone's markets in Africa and India.

Economic benefits

An increase in literacy has a direct impact on wages and the probability of being formally employed²⁴, as illiterate people can't perform basic functions involving reading and writing. Our research shows that initiatives like Knowledge is Power have the potential to increase GDP annually, with USD 3.1 billion by 2025 (across countries where initiative will be rolled out in Africa and India).

Health and societal benefits

Research shows that educated women are less likely to die in childbirth, to have children at an early age or to get married at an early age. Moreover, it has been proven that increasing mothers' education reduces malnutrition in the long term, which is the underlying cause of more than a third of global child deaths²⁵.

Improvements in women's literacy will also have a positive effect on the education of their children and families and will increase enrolment rates of their children in both primary and secondary education²⁶.

Looking ahead

To successfully scale up this or similar projects, mobile operators must collaborate with governments and NGOs and work together to overcome a number of potential challenges.

Most significantly, better access to mobile services for women in emerging markets is needed to enable wide-scale rollout. Expanding take-up of low-cost smartphones and adapting apps to be used on basic feature phones, as well as optimising the apps' data size storage and processor requirements without impacting the interactive features, so that they can be downloaded quickly, are critical to achieving the benefits.

Delivering successful classroom-based training requires funding from government or other donors. For example, adopting a model similar to Knowledge is Power would require an annual recurring investment of around USD 30 per participant user. In addition, the app must be designed and tailored for each market so it reflects local language and dialect.



I faced lots of problems due to my lack of education. I signed a document for my neighbour without knowing what it contained. I signed away my house, my jewellery and my little shop. Since then, I challenged myself to learn and be cautious before I sign any document. I have changed a lot, I feel that I came out from darkness to light. ”

Wafaa Mohamad Ramadan uses the literacy mobile application to help her learn both inside and outside the classroom. She has started to teach her neighbours and her children how to use it too



Theme 2

Teaching on digital literacy



The global technology skills gap has been widely reported over the past few years with employers facing ICT skills shortages in many already tight labour markets in developed countries. As new digital technologies emerge and the nature of jobs changes, employers are increasingly looking for people with ICT skills.

Recent research shows that the interest in pursuing ICT careers has been diminishing over the past years with the number of computer science graduates declining. This effect is intensified in Europe, where there is an increasing number of retirements and the digital skills gap is a real issue directly affecting the economy^{27,28}.

In the UK alone, it is estimated that the digital skills gap is costing the economy £63 billion a year in lost income²⁹. Also in various rapidly growing sectors in developing countries such as Ghana, Kenya and South Africa, a significant proportion of technology-related roles remain unfilled³⁰.

The technology skills gap also appears among older generations. Even though this trend is improving in most developed countries, where we see an increase in the proportion of internet users among the 65+ age group, the use of digital technologies and in particular computers remains somewhat wary. In 2014, it was estimated that only 38% of the elderly population – defined here as those aged

65–74 in the EU-28 – used the internet on a regular basis. Moreover, there is a relatively large digital divide between northern/western Member States and southern/eastern Member States, where the proportion of elderly internet users is much lower³¹.

Initiatives which are advancing digital and ICT skills can therefore have a significant impact on both the economy and welfare of a country. They prepare the youth for ICT-related jobs, increasing their likelihood of finding a well-paid job. Initiatives focusing on digital exclusion of the elderly will open up a wealth of new opportunities and services (e.g. internet banking, online shopping, online newspapers and social media) which has been shown to positively impact their quality of life³².

“ Teaching on digital literacy presents significant benefits for teachers as well as it will increase their access to education materials, facilitate the preparation and delivery of content and widen the possibility of sharing. Lack of computers and electricity to most schools are the most important barriers to this type of teaching. ”

Hon. Eng. Stella Martin Manyanya,
Deputy Minister of Education, Tanzania

Vodafone Turkey Coding Tomorrow

Promoting the digital development of youngsters



1,330 students participated in the first project pilot. Almost 600 children attended Hackathons



Local trainings include **4 hours of coding through MIT's coding program Scratch**



The programme targets the **whole country**, and currently covers 6 cities

In Turkey, Vodafone Turkey Foundation is tackling the digital divide by targeting the next generation of the country, providing them with essential skills for future employment. The Coding Tomorrow project funded by the Foundation is providing coding trainings to children across the country.

Key features

- ▶ The project is run by Habitat, a local NGO
- ▶ Targets learners aged 7–14 years old
- ▶ Focuses on underprivileged schools and areas
- ▶ Includes a train-the-trainer module

Vodafone Turkey Foundation started the Coding Tomorrow project in collaboration with the Habitat Association, a non-governmental organisation that is active in the sustainable development field. The goal of the initiative is to teach coding to children between the ages of 7 and 14 and give them an appreciation of what can be created with information technology.

The project focuses on helping children gain new digital skills and become active producers of technology rather than just being passive consumers of it. In addition, besides building coding capabilities, participants also develop skills such as problem solving, teamwork, creativity and algorithmic thinking.

The free programming language Scratch, developed for children by the Massachusetts Institute of Technology (MIT), is used in the training. The program can, for instance, be used to easily create animations or games, which is attractive for children of this age group. Additionally, at the end of the courses, the children attend 'Hackathons' in every city, where they code with the 'robotics' by experiencing the MBoT and makey-makeys.



The project pilot was launched in 2016, and 1,330 children participated in the first two months. The kick-off programme also included a 'Train the trainer' course, which was attended by 25 trainers. Training was given in the Black Sea province of Samsun, the Aegean province of İzmir, the central Anatolian province of Kayseri and the eastern province of Mardin, as well as Istanbul.

The project also includes Syrian refugee children. Coding Tomorrow was launched in Şanlıurfa, a city home to a large population of refugees, in February 2017 in order to train 250 Syrian refugee children by the end of May 2017.

The opportunity

There is an increasing realisation that teaching children how to code will give them a skill for life as coding is becoming the universal language of the planet and critical for many employment roles.

A growing number of countries are even adding coding training to their national curriculum, with Europe leading the way where children as young as 5 years old are being introduced to coding for the future.

Improving coding skills in children will improve their computational thinking and also trigger creativity and fluid minds allowing them to think 'out-of-the-box' as coding is a type of storytelling, and has many potential applications³³.

An increase in coding skills has a direct impact on job opportunities. Research shows that ICT-related jobs will increase by approximately 20% by 2025³⁴. Coding specialists are well paid and opportunities for these skilled employees will expand in the future.

Looking ahead

Coding training for children is on the agenda of the Turkish government so it is expected that the project will gain more traction and visibility in future. The project will initially focus on underprivileged children who would benefit the most from this type of training, but could soon be expanded to any social class. The Vodafone Foundation is also trying to attract more females to the programme by organising special sessions for girls, with the aim to increase their participation in the IT sector.

The project can be successfully scaled up and replicated anywhere around the world given the open-source nature of Scratch. The positive experience during the first pilot period reinforces the plan to expand the project across Turkey to deliver training to a higher number of children.

“
We will carry Turkey to the digital future and to our Gigabit Community with our children.”

Hasan Süel, Chief External Affairs Officer,
Vodafone Turkey



Vodafone Albania Innovation Clubs (iClubs)

Upskilling students and teachers for a career in ICT



4,000 students and close to **1,500 teachers** reached in two years of operation



iClubs established in **114 schools** in phase one and **320** expected by end of its 2nd year



6 million audience (broadcast media) and **1 million audience** (social media networks)

In Albania, a shortage in suitable digital skills for ICT employment persists in the labour market. Now the Vodafone Albania Foundation has funded the creation of iClubs, which aim to provide ICT education through extracurricular activities to both students and teachers across the country.

Key features

- ▶ ICT education through extracurricular activities
- ▶ Targets students aged 15–17 years old from high schools across the country
- ▶ TechCamp and Demo Day to convert the concept into a solution

iClubs is an initiative involving schools across Albania in the field of extracurricular youth education in ICT. The goal of the initiative is to develop students to become creative problem solvers who are able to use their imagination, creativity, empathy and technology to solve problems that they see in their school and the community where they live.

The project emerged as a partnership agreement between the Ministry of Education and Sports, the Ministry of Social Welfare and Youth, the British Council Albania and the Vodafone Albania Foundation. The Vodafone Albania Foundation and the British Council are the project funders, while the Ministry of Education and its institutions supported its implementation. The iClub concept was designed and supported by G-consultancy Innovation. The aim is to create a sustainable network of iClubs which will contribute to ICT education.

The first phase of iClubs project started in April 2015 and continued until June 2016, reaching a total of 800 students and 200 teachers. A second phase started in the first quarter of 2017, with the aim of reaching 3,200 students and 640 teachers.



In the first phase of the project, 114 iClubs were created as an extra-curricular activity in secondary schools, initiated by teachers who had received design-thinking training. Each iClub had between five and ten students each, aged 15 to 17 years old. Students were asked to explore field research (talking to teachers, other students, parents and businesses in their villages and towns) on how to improve their schools and to help their community by making greater use of ICT.

Students were then invited to design project proposals in their iClub (e.g. use holograms for education, create a 3D museum, connect buyers online), which were entered in a country-wide competition.

While each iClub was mentored to develop the concept further, 13 proposals were selected at regional level. The teams were invited to participate in a nine-week television programme, where they presented their ideas to a live big public audience. They were also invited to attend a TechCamp where they received specialised training and mentoring.

At the TechCamp, the 80 young innovators from the 13 selected iClubs gathered for an intensive four-day event in Tirana where the students learned about coding, cloud tools and website design from a Microsoft trainer.

In addition, participants took their design-thinking practice further by creating hardware prototypes coached by two trainers from Technology Will Save Us, a technology startup developing make-it-yourself kits and digital tools for children.

The Vodafone M-Pesa money transfer platform was available for crowdfunding efforts by the finalist teams. This event served as an invaluable opportunity ahead of the Demo Day, where about 30 business executives pledged support to all projects to be implemented.

A lot of partnerships were created and became crucial to this project – the British Council Albania and Vodafone Foundation who supported it, the Albanian Ministry of Education and Sports, the Educational Directorates in every district and the schools' leadership.

The students were encouraged to create their innovation ecosystem in their village, or town, with parents, local authorities, businesses and local media, who started to contribute in various ways.

There are two particular collaborative innovation networks that were created through this project that make it really special. One is the teachers' network, a Facebook group, where teachers share the activities of the iClub and connect with others. It also gave the teachers the possibility to connect to wider initiatives like the global Teachers' Guild. The second collaborative innovation network is the one that kicked off at the iClub Techcamp, the young innovators network, with students from around the country.



“**‘Using the technology to promote reading’ was our best creation during the first year of our iClub. Now we can surely confirm, it was great to work on a project designed by our team which lights the passion of students and citizens for reading books. The success of the initiative is measured by the number of visitors at the school and town hall libraries. Figures are very optimistic.**”

Liljana Kurti, Teacher (Librazhd)

The opportunity



Potential to **reach close to 19 million children** by 2025



Improved ICT skills for 12.8% of the targeted youngsters by 2025



USD 701 million annual **contribution to GDP** by 2025



Projects around the world show that ICT skills can have a substantial influence on achieving specific social and economic development goals when used appropriately and with a people-centred approach in mind.

The iClub aims to close the gaps in Albania's high school curricula regarding topics such as design thinking, social innovation and technology applications. This stands to have a profound impact on the lives of many youngsters.

Potential reach

Our modelling found that if initiatives like iClub would be widely deployed across Vodafone's markets globally, they could potentially cumulatively reach 19 million high school students by 2025.

Improved ICT skills

By 2025, the programme could successfully improve the ICT skills of 12.8% of students enrolled in high school, across the Vodafone markets worldwide.

Economic benefits

A recent PIAAC survey of adult skills by the OECD found that adults without computer experience or those who fail on basic ICT tasks when solving problems in a technology-rich environment are more often unemployed or out of the labour market³⁵.

Our research shows that if initiatives like iClub were rolled out across Vodafone's markets worldwide, they could generate an annual economic impact of USD 701 million by 2025.

Looking ahead

A second phase of iClub is under preparation for 2017/18, with the aim of extending the initiative to all 320 high schools in the country, ensure sustainability and further enhance teachers' capabilities by leveraging the teacher participants from the earlier phase. The Vodafone Albania Foundation's aim is to develop a sustainable iClub network, after which it is expected to be passed over to the Ministry of Education & Sports.

In order to become a sustainable programme, iClub's objective is to be accepted and integrated into the school programme as part of the national curriculum. The British Council Albania has committed to organise a stakeholders conference to achieve this goal. This would allow the country to close the existing gaps at a national level by bringing the latest and best ICT practices to the school level.

Vodafone Italy School of Internet

Countering the digital divide of the senior population



Over **205,000** participants have received training



180 course facilitators delivered **80,000 hours** of course content



800 municipalities reached across Italy

In Italy, only around 17% of the population aged over 55 uses and communicates via the internet on a daily basis. The School of Internet project aims to counter this digital divide by educating senior citizens on digital literacy to assist them in their daily lives.

Key features

- ◆ Targeted Italian citizens aged over 55
- ◆ Online and offline approach to improve digital literacy
- ◆ Includes technical and soft skill teacher training

In September 2013, the Vodafone Italy Foundation, in partnership with H-Farm, a company supporting digital initiatives, and Digital Accademia, an Italian school of digital literacy, launched the School of Internet initiative. This initiative was launched based on suggestions from the Ministry of Education and the National Association of Italian Municipalities, with the objective of improving digital literacy among senior people (aged 55+) in Italy. At the same time, the initiative promotes encounters between different generations as the course facilitators are young digital natives. The project ran successfully under the Vodafone Foundation until December 2015, after which a local NGO has continued to run the programme independently.

The School of Internet is a classroom-based course on digital literacy for Italian citizens over the age of 55. Attendees are provided with Vodafone-enabled tablet computers, which connect to the internet through either WiFi or a SIM card. They are educated on how to surf and use online tools. Over 205,000 citizens aged over 55 received the training, which is equivalent to 1.3% of people without access to the internet in Italy. Around 180 course facilitators delivered 80,000 hours of course content in many Italian cities including Turin, Verona, Padua, Parma, Pescara and Lecce.

Digital Accademia, one of the key partners, trained the course facilitators, most of whom were young university students. They received special technical but also soft skill teacher training to maintain attention and keep motivation high. The course facilitators received a remuneration for their efforts so that they could combine this with their own studies.

The classes are specially designed for people aged 55+ who have few or no digital literacy skills. The focus is on discovering social networks (and interacting with friends and relatives), looking up information online, accessing digital health services and enjoying local town services online.



The opportunity



Potential to **reach 4.8 million seniors** (age 55+) **by 2025** across Vodafone's mature markets



Improved digital literacy skills for **6.3% of targeted seniors by 2025**



Increased possession of **smartphones (+6%), tablets (+12%) and laptops (+5%)** by seniors who participated

Improving digital literacy among seniors can have a direct impact on their quality of life and will benefit the economy as well. When looking at the low daily internet usage rates among senior people even in mature markets, the potential impact of initiatives like School of Internet becomes evident.

In Italy around 35% of the population is 55 years of age and older (and this proportion is growing) and we estimated that 74% of them do not use the internet on a daily basis (i.e. 15.7 million people). When looking at all mature countries across the entire Vodafone footprint, we found that 32% of the population is 55 years of age and older, of which 66% do not use the internet on a daily basis. This represents a staggering total of 77.3 million people whose lives could be improved if they had better digital literacy skills and access to the web.

Potential reach

Our modelling found that if initiatives like School of Internet were deployed across Vodafone's mature markets, they could potentially reach 4.8 million seniors by 2025, the majority of which would be in Italy (1.2 million), Germany (1.0 million) and Spain (0.6 million).

Improved digital literacy among seniors

The programme could successfully improve digital literacy for 6.3% of people who are not using the internet on a daily basis by 2025, across the Vodafone mature markets.

Increased use digital technologies

An impact study conducted by the Vodafone Italy Foundation showed that the programme successfully increased usage of smartphones, tablets and laptops among the course participants. Possession of smartphones increased by 6%, tablets by 12% and laptops by 5%.

Moreover, after attending the School of Internet seniors increasingly surfed the internet on a tablet (+12%), smartphone (+7%) and on a laptop (+45%)³⁶.

Benefits for health

The School of Internet initiative focuses on teaching seniors to access digital health services, enabling them to take ownership of their health plans and giving them access to personalised care.

Looking ahead

To successfully scale up similar projects, collaboration between governments, NGOs and operators is essential. Delivering effective digital training from qualified instructors requires funding from donors. For example, adopting a model analogous to School of Internet would require an annual recurring investment of around USD 25 per participant. School of Internet could be widely replicated across geographies by reusing the training format for each market so it reflects the local language and dialect.

Currently there are a number of programmes being rolled out to tackle the differing aspects of the digital divide as Italy has one of the lowest internet penetration rates in Europe and some of the poorest broadband services of G7 countries³⁷. The Vodafone Italy Foundation aims to increase the impact that School of Internet has against the context of wider government and EU programmes on digital inclusion and how it could build a model for sustainability based upon national and EU-wide strategies³⁸.

More at Vodafone

Senior training programme in ICT, Spain

The Vodafone Spain Foundation launched a senior training programme in ICT responding primarily to the necessity of including senior citizens into the current digital society. The initiative consists of a practical training programme about the use of ICT, in order to reduce the digital gap and social exclusion of this group from accessing emerging technologies. The programme is taught all over Spain and since its launch in 2005 more than 210,000 senior citizens have benefited from it, in a country where approximately 75% of the +55 age group do not use the internet on a daily basis. The Foundation has developed a specific website to facilitate trainings³⁹ as well as audio-visual materials (e.g. training videos on the use of a smartphone, WhatsApp or Facebook) and guidebooks.

Vodafone Hungary Digital School Programme

Promoting digital equality



1,300 Vodafone tablets
distributed across
25 elementary schools



6,500 students
and **700 teachers**
have participated



Provision of **Vodafone tablets**
and **3G data allowance**
for educational purposes

In Hungary, about 17% of children in primary schools come from underprivileged backgrounds and do not have access to ICT. The Vodafone Digital School Programme is providing digital education to children in less advantaged elementary schools to ensure that both teachers and students develop the necessary ICT skills needed for the digital future.

Key features

- ✦ Targets learners aged 6–14 years old
- ✦ Involves a train-the-teacher module
- ✦ Aims to create equal opportunities

In December 2015, Vodafone Hungary launched the Digital School Programme, a wide-scale national initiative aimed at the development of digital literacy skills of less advantaged children, with the aim of promoting the digital transformation of education in Hungary.

The programme is a cooperation signed jointly by the Ministry of Human Capabilities, the Klebelsberg Institutional Maintenance Centre, the Foundation for Hejőkeresztúr Schoolchildren, Vodafone Hungary and the Vodafone Hungary Foundation. The Foundation is in charge of providing professional teacher training, while Vodafone Hungary provides state-of-the-art tablets as well as internet connection for free. The initiative is expected to run for a minimum of five years.

The Digital School Programme aims to develop digital competences of schoolchildren and directly improve academic results and school attendance while reducing dropout rates because children's engagement is much higher when digital technologies are involved. The programme's goal is to create equal opportunities by focusing on less-advantaged schoolchildren who often have limited or no access to the internet or ICT in Hungary and would have inadequate future labour qualifications.

In order to achieve this, an important part of the programme focuses on educating teachers to become more 'digitally savvy' and influence the way education is being delivered. Teachers were also provided with 'internet security' training as most of them are not fully aware of some of the dangers that children may face in the digital era of today.

Since its launch in December 2015 the programme has reached 6,500 children (aged between 6 and 14 years old) and 700 teachers in 25 elementary schools in Hungary. Over 1,300 state-of-the-art Vodafone-enabled tablets with a 3GB monthly data allowance have been distributed to the elementary schools, which are used for educational purposes on a daily basis.



The opportunity



Potential to reach
18 million children
by 2025



Potential to improve conditions
for **14.8%** of children living in poverty
in Vodafone markets by 2025



Potential annual
economic benefit
of **USD 927** million by 2025

Vodafone intends to contribute to the development of the national public education system in Hungary, spreading the educational use of ICT and create digital equal opportunities in a sustainable way.

There is an ICT skills gap in the current workforce in Hungary with only 50% of individuals having at least basic digital skills while ICT specialists represent a relatively high share of the workforce (4.9% compared to 3.7% in the EU)⁴⁰. Hungarian companies increasingly rely on an imported workforce because of this skills gap. Therefore, initiatives like the Digital School Programme have a huge potential as they improve long-term probability of employment and the chance of a better salary.

Potential reach

Our modelling shows that if initiatives like the Digital School Programme with a special focus on disadvantaged children would be scaled up across Vodafone's markets worldwide, there is a potential to reach 18 million children between the age of 6 and 14 by 2025. The majority of these would be in India, which is the country with the largest number of children living in child poverty (30% according to the World Bank).

Improved conditions for children living in poverty

Around 14.8% of children living in poverty in Vodafone's markets could benefit from initiatives like the Digital School Programme which would have a direct impact on their living conditions, as they will have better access to education and be better prepared for the labour market.

Economic benefit

Students graduating with an ICT skill set have a higher probability of finding a job and obtaining a better salary⁴¹. We estimated that 32% of students who received training such as the Digital School Programme would have access to better employment, which could lead to an annual economic benefit of USD 927 million by 2025.

Looking ahead

As the initiative goes forward, plans for the future include involving new schools, further developing the educational content to keep it up to date, and organising programmes to increase the students' readiness to break into the world of higher education and/or employment. The project is currently developing a system that clearly outlines the conditions and requirements for participating in the programme with the aim to have a more tailored selection of the participating schools.

To successfully scale up the Digital School Programme, several barriers must be addressed. In addition to having the right resources and funding in place, there is an issue of uneven internet connectivity within countries to the detriment of people living in disadvantaged neighbourhoods. Modern computers and other digital equipment is often lacking in disadvantaged elementary schools so significant investment is needed.

Finally, it is important to ensure proper teacher training to make sure they are up to date with the content but also counter the fear that they as educators may be rendered irrelevant by the introduction of more computers in the classroom. It is also important to educate them on internet safety for children and some of the hidden dangers that children have to be protected from.



“

One of the greatest benefits of the Vodafone Digital School Programme is that it provides not only tools, but methodology as well to students and their teachers. The development of digital literacy is of key importance to the success of the Digital Hungary programme.”

Dr Judit Czunyiné Bertalan, State Secretary, Hungary

Women Enhancing Technology (WeTech)

Providing a gateway for women to succeed in technology careers



10,000+ participants
and **200+ professional mentors**



27 partner
organisations



21 countries
across **three continents**

Research shows that when more women work, economies grow. Empowering the next generation of women in the technology sector is beneficial for the global economy. WeTech enables this by providing scholarships, mentoring, internships, seed funding and afterschool STEM⁴² education experiences that inspire girls and women to pursue a technical education and career.

Key features

- ◆ Focus on technology careers for girls
- ◆ Powerful array of programme partners
- ◆ Programmes include hackathons, coding boot camps, internships, mentorships
- ◆ Focus on Africa, Asia and the US

In 2013, the Institute of International Education (IIE) launched the Women Enhancing Technology (WeTech) programme at the Clinton Global Initiative annual meeting. WeTech is backed by a consortium of partners and designs and supports a series of innovative activities to help women and girls enter and succeed in technology careers, with the goal of enhancing women's talents and skills needed to fuel technological and economic growth.

In Asia and the United States, WeTech links girls and women to scholarships for engineering and related subjects, skills training, hackathons, field trips to meet role models, mentorships and internships that prepare them to enter and succeed in high-paying tech careers. In Africa, WeTech provided seed grants and invested in nascent women's groups and individual champions who are supporting and encouraging women and girls in computer science.



WeTech is driven by partners with a shared vision of women building the tech pipeline, from entry level to the C-suite. The key partners include Qualcomm, Goldman Sachs, Juniper Networks and Google. This consortium of dedicated partners joined IIE to commit funding, resources, employee expertise and time.

The programme has a global focus, and will include initiatives to encourage parents and schools to teach technology subjects to girls, scholarships, internships and other professional development opportunities. WeTech's activities empowering girls and women can be grouped into four major categories as described on the following page.



Case studies

Qcamp for Girls in STEM

WeTech is reaching the younger generation through Qualcomm's innovative 'Qcamp for Girls in STEM'. Qcamp is now in its fourth year and runs a one to two-week summer camp for middle school girls recruited from the wider San Diego area. Qcamp is held in Qualcomm's Thinkabit Lab™, a hands-on, child-friendly makerspace for students who want to tinker and invent.

For the last three years, girls were invited back every year and also reached with special STEM activities during the school year. If Qcamp is successful, the girls will continue their interest in STEM and possibly even select a STEM degree at the university level. As a partner of Qcamp, University of California at Berkeley's Lawrence Hall of Science is researching the long-term outcomes of this programme.

Afterschool programme

Launched in 2014, the WeTech Afterschool programme connected industry professionals from Qualcomm and Goldman Sachs with teams of middle school and high school girls in India and San Diego. Over a three-year period, IIE supported 45 teams consisting of 225 girls from schools in India to participate in the Technovation entrepreneurship competition, which challenges girls from all over the world to build mobile apps that address community problems.

Afterschool enrichment activities introduced the teams to different aspects of technology careers and have included panel discussions hosted by Goldman Sachs, visits to Intuit and Google regional offices, a full-day event at TechHub Bangalore, and virtual meet ups between the Bangalore and San Diego teams.

STEM scholarships for women

WeTech believes that providing young women with university scholarships for STEM has a tremendous impact on women's retention and success rate, especially in a time when the global tech industry desperately needs more women trained for STEM careers.

Combining financial support with internships and mentorships gives women an important opportunity to gain real-world experience, access to role models and enhanced technical skills. This holistic package of support ensures that young women will elect a technical career. WeTech's scholarship programmes complement IIE's high-impact scholarship, training and leadership programmes and supports IIE's mission of advancing international education and access to education worldwide.

Seed Fund

With the support of partner Google in 2013 to 2015, IIE selected 35 organisations across Africa to receive grants of USD 2,000 to USD 20,000 to expand their work supporting girls and women in computer science. The fund provided the grants to nascent networks, organisations and social enterprises, as well as individual champions working to expose more girls and women to computer science.

WeTech's work with the Seed Fund concluded in 2015, but Seed Fund Network members continue to meet and work towards increasing access for women and girls in computer science-related training, jobs and leadership roles. The goal of the Seed Fund is to provide knowledge and tools for organisations to empower the next generation of women computer science leaders throughout the continent.

The opportunity



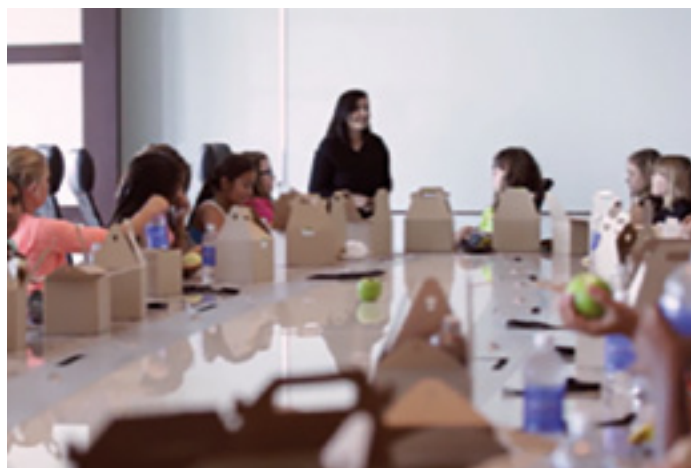
Women can benefit from **increased employment in the technology sector**



Investments in women's employment yields **significant economic benefits**



Female education and empowerment will have positive impact **on health and education of their children**



With the accelerating growth of computer-related jobs globally, and a shortfall of suitably equipped employees projected to be in the millions⁴³, the engagement of women in the tech sector is critical to both bridge the talent gap and provide companies with the diverse skills and perspectives necessary to thrive.

Increased employment

At the current rate of talent development, nearly half the technology jobs in the United States will go unfilled⁴⁴. It is clear that the global economy needs women to be part of the solution, and women have the opportunity to contribute their brainpower to the next innovation in the tech sector.

Economic benefits

Studies in the last years have shown how investments in women's employment yield significant gains in the prosperity of businesses⁴⁵ and in the economy overall⁴⁶. It is calculated that women could increase their income globally by up to 76 % if the employment participation gap and the wage gap between women and men were closed. This is calculated to have a global value of USD 17 trillion⁴⁷.

Benefits related to health and family

Recent studies also showed that investing in education for females has a positive impact on health⁴⁸ and the education of their children. Educated women are better at managing their own and their family's health issues⁴⁹ and are more likely to provide a better education to their children.

Looking ahead

IIE plans to expand WeTech to other countries and to create an ongoing cycle of women supporting other women in entering the tech sector. IIE believes that retaining more girls in computer science should be tackled from various levels, in various parts of the world – from the US to Africa – and is most effective in partnership with NGOs, corporations, associations and individuals.

There is therefore a need to support initiatives that can place women in the tech sector so that they can enter and succeed in the technology fields of tomorrow. One possible solution may be for governments to take the lead, and attempt to increase the percentage of women in STEM jobs in the public sector, with the expectation that the private sector follows suit. This way women will be part of the solution by developing the skills urgently needed to fuel global technological and economic growth.



The WeTech Afterschool Programme goes beyond just a particular niche of development; it teaches the full life cycle of a product, including pitching ideas, creating a business plan, developing and completing a product, and marketing the final product. Through mentoring, girls realise their individual talents and weaknesses, and then work as a team to become well-rounded. Growing these skill sets will, in turn, help them to build strong careers. ”

Dhana Kodithi, Mentor from Qualcomm

Theme 3

Empowering teachers



Quality teachers are key to ensuring sustainable global development and are an important criterion for equity, access and quality in education. Indeed, the quality of education depends widely on teachers, which is why the Sustainable Development Goal (SDG 4) of 'Quality Education' specifically calls on countries to significantly increase their recruitment and training.

According to UNESCO there is a significant shortage of 69 million teachers worldwide to achieve universal primary and secondary education by 2030. Sub-Saharan Africa faces the largest teacher gap with 17 million primary and secondary school teachers needed by 2030. Southern Asia has the second-largest teacher gap with 15 million additional teachers needed by 2030, especially at the secondary level⁵⁰.

Research shows that improving the quality of teachers has a positive impact on the learning performance of students. Both maths and reading test scores increase when high-performing teachers are put in place, and the effect of this achievement persists for at least three subsequent years. Moreover, the difference between a very effective teacher and a poorly

performing teacher can be very high. For example, during one year with a very effective maths teacher, pupils gain 40% more in their learning than they would with a poorly performing maths teacher, and the effects are even more significant for pupils from disadvantaged backgrounds, as these often do not have the support from home⁵¹.

Initiatives that are focusing on empowering teachers therefore receive a lot of attention, as they have the potential to change the lives of many children around the world. There are different approaches to empowering teachers such as professional training in a classroom, e-learning courses, and providing access and support to online learning materials.

TESSA – Teacher Education in sub-Saharan Africa

Providing school-based teacher education and training materials online



Reached almost
1 million teachers



14 project partners and
75 adaptable Open Educational Resources (OER)



10 sub-Saharan African countries covered

With a gap of 17 million teachers, sub-Saharan Africa faces the greatest teacher shortage to achieve universal primary and secondary education by 2030. And with millions of children emerging from primary school with reading, writing and literacy skills 'far below expected levels', the quality of education remains low⁵². TESSA is making free educational resources available with the aim to enhance and improve the quality and access to education materials for teachers.

Key features

- ▶ Collaborative creation and adaptation of multilingual study unit
- ▶ Flexible to meet local needs and suitable for hi-tech and low-tech situations
- ▶ Places the teacher at the centre of efforts to improve the provision of education

TESSA is an initiative backed by a network of teacher education institutions working alongside The Open University, UK, aiming to improve the quality of classroom practices and access to teacher materials across sub-Saharan Africa. TESSA has been successfully creating and disseminating Open Educational Resources (OER) to support teachers since 2005. Teachers and teacher educators access the OER on computers, tablets or mobile phones; they are available on CDs, SD cards, memory sticks and in print. They can be accessed at www.tessafrica.net.

There are 14 teacher education institutions across Ghana, Kenya, Nigeria, Rwanda, South Africa, Sudan, Tanzania, Togo, Uganda and Zambia, which support the initiative by contributing to the educational content. Besides the partner institutions, other key members of the TESSA network include the Commonwealth of Learning (COL), the National Commission for College of Education (Nigeria), and the South African Institute for Distance Education (Saide).

TESSA is essentially a bank of materials for teachers, which includes to date 75 primary school study units freely available for teachers and education institutions to use and adapt. The study units have been adapted to 10 country contexts and curricula, and are available in four different languages (Arabic, English, French and Swahili). The study units also include a suggestion of activities that teachers can carry out in their classrooms. Guidance handbooks and toolkits have also been created for teachers, to help them integrate and make effective use of study units in their courses.

The TESSA study units have been used in many schools and institutions across sub-Saharan Africa reaching a total of almost 1 million teacher-learners, in-service teachers and teacher educators by the end of 2016.





TESSA's study units are structured around professional classroom activities that aim to improve the effectiveness of teacher–pupil interactions. They provide building blocks for new in-service and pre-service courses or enhance existing programmes. Most education systems in Africa are attempting to embrace more active approaches to teaching and learning, and TESSA provides an exemplification of this.

The initiative received a £1 million donation in 2015 from the Allan and Nesta Ferguson Charitable Trust. This donation enabled TESSA to continue the programme and to leverage over £11 million in additional funding, from funders such as the Scottish Government and the UK Government's Department for International Development.

TESSA has tackled head on the most intractable of all challenges faced by teacher education and schooling in sub-Saharan Africa – quality. Through the development and dissemination of study units, TESSA aims to make a contribution towards Sustainable Development Goal 4, 'quality education', which includes improving excellence in teaching standards across sub-Saharan Africa, through quality and comprehensive educational resources. The critical key indicators of success include significant project take-up in diverse settings and the significant impact on the practices and identities of teacher educators and teacher-learners.

In order to extend the reach of TESSA, the initiative is appointing 'ambassadors' – entrepreneurial people tasked with raising the profile of TESSA in their country by finding and linking TESSA users through social media, attending events where TESSA might be relevant and providing initial support for new users. A small grant scheme has also been devised. This will give TESSA ambassadors and partner institutions the opportunity to apply for a small grant to develop local initiatives.

In addition, TESSA is currently focusing on developing a Massive Open Online Course (MOOC) for teacher education in Africa. The MOOC will focus on active learning and how to integrate ICT into classroom activities. To this end, TESSA will be looking for partners to run face-to-face classes alongside the MOOC. These could be universities, colleges, NGOs or other agencies with an interest in teacher education.

Given the success of TESSA in sub-Saharan Africa, The Open University launched the sister programme 'TESS-India' in 2012 aiming to improve the quality and quantity of teacher education in India. India faces a shortage of over a million trained and qualified teachers at both elementary and secondary school levels. TESS-India was bequest of the Government of India to help address the issue. TESS-India has created a large bank of original OER, adapted (linguistically and culturally) for the local context of each of the seven states in India where the project has been rolled out.



The opportunity



Increased
focus on
classroom practice



Improved
student-teacher
classroom interaction



Enriched
teacher planning
and preparation



Looking ahead

Sub-Saharan Africa is in the midst of a digital revolution and TESSA could further assist in the development of an appropriate education strategy for each country. TESSA has had a broad impact regionally – embedded in 10 countries already – and the scale of the opportunity remains substantial across the 49 countries in sub-Saharan Africa, each with unique education landscapes and needs. TESSA's open and adaptable approach is uniquely placed to support change and address key areas with international quality resources, which are locally relevant and freely available.

For TESSA to become more widely embedded and promoted in schools, training for head teachers and other leaders should be devised and made available. A further opportunity to enhance TESSA's longer-term sustainability is to encourage creative engagement through and between TESSA institutions. To this end, the possibility of seed funds for innovative development project ideas should be explored. This could help to bring in other partners and has proved to be very successful in other projects.

Strengthening TESSA will ensure that teachers and teacher-educators at secondary level will benefit from enhanced support through additional resources, guidance workbooks and a distribution strategy for implementation.

“
The education and training of teachers represent one of the greatest challenges for education systems in sub-Saharan Africa. TESSA is an imaginative and creative response to that. Most importantly, it stresses the value of raising standards through international co-operation, not only between African countries (and setting up a structure for countries to productively co-operate is a major achievement), but also through judicious selection of international organisations that really have something to offer meeting the challenge.”

Professor Jophus Anamuah-Mensah,
Executive Chair, TESSA

With the Millennium Development Goals in mind, TESSA has contributed towards increasing the pace of progress towards universal primary education, though development opportunities remain.

Improved learning outcomes

Teachers who have been using TESSA show improved classroom skills and greater understanding of 'learner-centred' approaches within their classrooms – i.e. recognising the knowledge and skills of their learners and engaging in joint construction of knowledge.

Higher classroom interaction

In a study in Tanzania, teachers reported that their pedagogical skills had improved, that there was more interaction in their classrooms and that the TESSA study units are valuable reference materials.

Increased collaboration and reflective thinking

A workshop conducted in Ghana to assess the TESSA study units found that the programme is valued and influences classroom practices, that the teachers learn from their reflective writing and collaborate with each other, and that the approaches used were supporting pupil learning.

Vodafone – Be Strong Online and *Digital Parenting* magazine

Helping to build children's emotional resilience across various areas of online safety



4,400 downloads by schools



369 students and **69 teachers** in **39 schools** trained using a train the trainer method



4 million copies of *Digital Parenting* magazine distributed through schools

Vodafone and the Diana Award have teamed up to create Be Strong Online, a free programme for students to help each other explore the digital world. The programme consists of modules for teachers which cover everything from cyberbullying, gaming and selfies to privacy, apps and social networking. Vodafone and ParentZone produce *Digital Parenting* magazine, an annual publication in hard copy and digital version for families covering relevant aspects of online safety for children of all ages.

Access to online learning and the internet can open up new worlds and possibilities. However, it can also bring new challenges for young people. Not everything they see online is suitable for children and there are new risks to understand. Self-expression, creativity, collaboration – technology has lots of benefits. But with some young people pushing boundaries and behaving differently online, it is critical to also provide advice and support on the use of internet tools and resources.

Vodafone and the Diana Award, a specialist NGO have developed online resources to help build teenagers' emotional resilience across various areas of online safety, starting with cyberbullying to help them develop the ability to cope with anything that comes up in their digital lives. They use a peer-to-peer format: each module provides all the resources needed for teachers to train a small group of students ('Be Strong Online (BSO) Ambassadors') to deliver short lessons to other students in the school, including lesson plans and videos. The resources are also being localised with national NGOs by Vodafone in Greece, Spain, Czech Republic and the Netherlands.



The modules cover Cyberbullying (Be Strong), Social Media, Power of Play, Selfies, Digital Footprint, Coding, Peer Pressure, Critical Thinking and Well Being. The modules are available for download and have also been included as an internet safety channel within the Instant School.

This coming year Vodafone plans to roll the Be Strong programme out using large scale regional events to train more BSO Ambassadors and teachers.

This is supported further by the distribution of the *Digital Parenting* magazine, which is written by ParentZone in association with Vodafone and is made available both online and through schools. So far over 4 million copies have been distributed through schools and local authorities to parents. The current fifth edition is the most successful yet, with over a million copies distributed on request within six months of publication. Vodafone will publish a new edition of the magazine in autumn 2017.



The Be Strong Online modules address many of the key issues and create an opportunity for teachers and students to think together and develop their thoughts across the many varied online challenges and opportunities. ”

Dr Richard Graham,
leading child and adolescent psychiatrist

Theme 4

Providing education in refugee camps



Education of refugees poses significant challenges even though it is one of the highest priorities of refugee communities. Access to quality education for refugees is limited and uneven across regions, particularly for girls and at secondary levels. Moreover, refugee classrooms are some of the toughest learning environments in the world. Teachers routinely work in low-resource classrooms where they are responsible for large numbers of mixed-age and mixed-ability learners, many of whom have witnessed violence, have been separated from family members and have experienced disruptions to their schooling. Many of these teachers are refugees themselves, and at times only have 10 days of training to prepare them for teaching⁵³.

The UN Refugee Agency, UNHCR, sets out an agenda for change aimed at promoting quality and protective education for refugees, promoting education as a durable solution. According to UNHCR, refugee education initiatives should focus at least on the following:

- Inclusion of refugees into national education systems
- Provision of lifelong learning opportunities for all refugees, with emphasis on access for girls and other marginalised groups

- Investment in teacher training that cultivates high-quality skills related to both pedagogy and content
- Development of new standards and indicators for education that measure learning outcomes
- Recognition of the connections between education and conflict in all education policy and planning
- Support for increased and predictable human and financial resources in education

Many refugee education initiatives are emerging around the world to tackle this challenge. Most of the recent initiatives rely on digital technologies and focus on the integration of ICT in the learning experience and content, because of the proven benefits as discussed in themes 1 and 2. Teacher education is also an important success factor as explained in theme 3, especially in the refugee context where they do not have access to a lot of resources. In many remote refugee camps, some of the teachers are from the camp itself and hence need adequate training to make an impact.

Vodafone Instant Network Schools

Delivering quality education to refugees



31 Instant Network Schools
in 7 refugee camps



Benefiting **40,000+**
refugee students and **600+**
teachers each month



70 trained
Vodafone employees
ready to be deployed

Over 50% of the world's 63.5 million displaced people are children. The average length of time that someone is displaced is 20 years, meaning a child can be born, raised and do his or her entire schooling in the closed environment of refugee camps with limited access to a quality education. Schools in refugee camps are often under-resourced (lack of buildings, trained teachers, books) and isolated from the outside world. Vodafone's Instant Network Schools initiative provides these schools with access to technology, the internet and educational content to enhance the quality of education for students living in these circumstances, with the ultimate aim of improving their future life prospects.

Key features

- ◆ Connectivity and mobile education content to schools in isolated communities
- ◆ Targets young refugees aged 7–25 years old as well as local communities
- ◆ Serves refugee camps in Kenya, Tanzania, Democratic Republic of Congo (DRC) and South Sudan

Instant Network Schools is a project supported by the Vodafone Foundation in partnership with the United Nations Refugee Agency (UNHCR). The objective of the programme is to support quality education in refugee camps in Kenya, Tanzania, DRC and South Sudan, and to connect schools in refugee camps with the outside world. In addition, the programme also targets IDPs (Internally Displaced People) and local host communities who can also benefit from the Instant Network Schools.

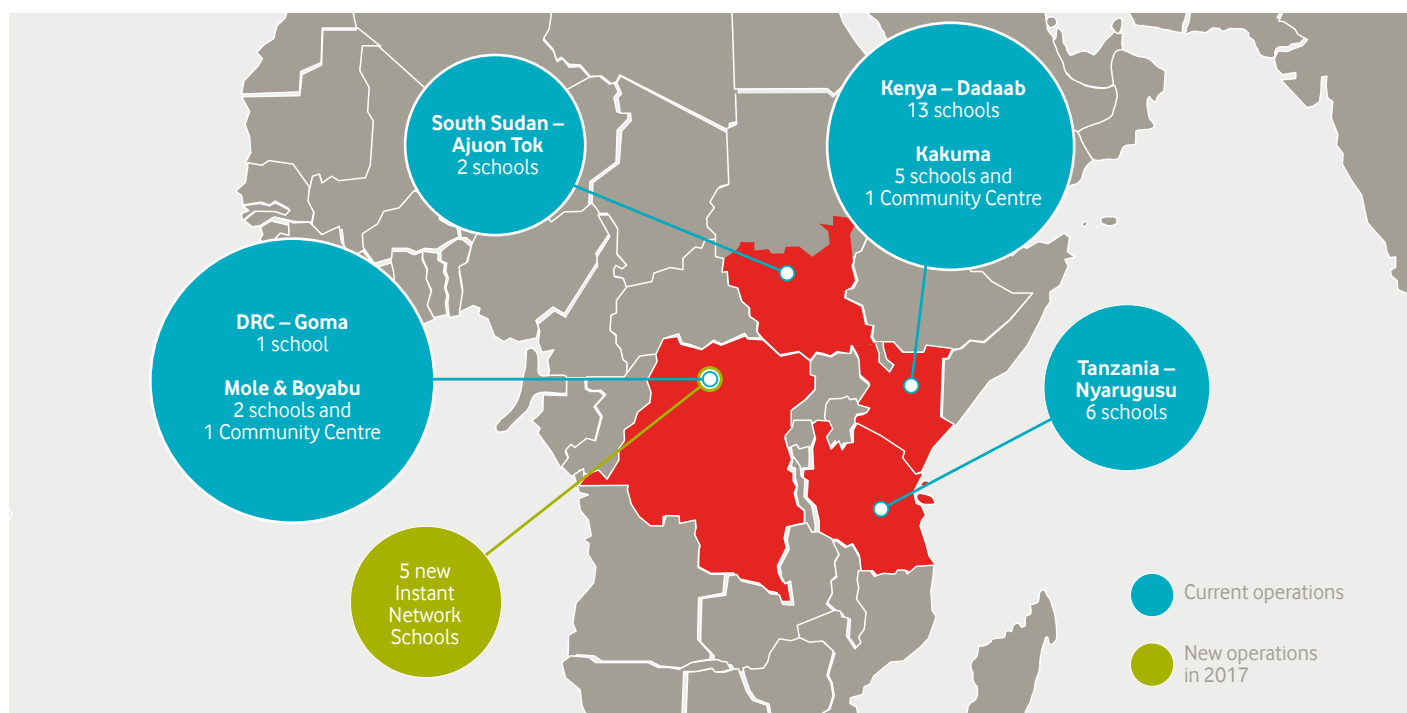
The Instant Network Schools programme provides power (solar panels and batteries) and internet connectivity to classrooms in refugee camps as well as tablets and computers where students and teachers can access online and offline digital educational content and interactive tools. The programme also includes teacher training and it is aimed at providing previously remote

and isolated communities with access to a wealth of educational content and resources. The Vodafone Foundation believes that this link to the outside world can be a 'game changer' for educational programmes in refugee camps, ending their effective isolation, and will be critical for the long-term future of those children and their communities.

By end 2018, Vodafone and Vodafone Foundation will have invested over USD 10 million in cash, equipment, free network and technical support in the Instant Network Schools programme.



Instant Network School in the Mole Refugee Camp in the Democratic Republic of Congo (DRC)



There are 70 trained Vodafone employees who make up the Instant Network team. The volunteers remain on standby ready to set up the schools and manage on-site introductory teacher training alongside UNHCR. The teacher training is designed around human-centred design principles and aims to build ownership of the Instant Network School programme within the local community and ensuring that the technology, and solution, responds to the local needs.

The first Instant Network School was deployed in October 2013 in Goma, DRC in partnership with NGO Don Bosco. An additional 13 schools were later opened in Dadaab camp, Kenya with UNHCR in May 2014, while one Instant Network School and one Community Centre were opened in Kakuma, Kenya in 2015, now hosting over 160,000 refugees. The Instant Network Team deployed three new Instant Network Schools in Mole and Boyabu refugee camps in remote Equateur Province at the beginning of September 2016, with Vodacom Congo and UNHCR. These camps host more than 50,000 refugees who fled civil war in neighbouring Central African Republic. As of January 2017, the Vodafone Foundation and UNHCR had deployed 31 Instant Network Schools, benefiting 40,000+ young refugees and 600+ teachers every month. The Instant Network Schools programme is currently funded until the end of 2018.

Previously, when technology centres were built in a refugee community, staff members spent a significant portion of their time teaching others how to use a computer. With the implementation of Instant Network Schools in a refugee community, the focus shifted back from teaching computer skills to teaching subject matter that is part of the curriculum. The programme has been warmly received as it is seen as enhancing initial investments by focusing less on the technology and more on developing a cohesive system with a strong emphasis on content and capacity building.

The Vodafone Foundation leveraged its corporate relationships to provide further support to the project. For example, its connection

with Huawei enabled an in-kind donation of 1,200 tablets over 2015 and 2016. In addition, Safaricom (partly owned by Vodafone) and Vodacom DRC (South African unit of Vodafone) have been actively supporting the programme by offering free connectivity in Dadaab, Kakuma and the Equatorial region.

What makes a successful Instant Network classroom?



Tablet

- 10 inch
- WiFi enabled
- Android 4.4 - Kit Kat



Power

Combination of solar and batteries and back-up generator.



Connectivity

Either mobile network or satellite.



Content

PDF of text books of national curriculum, interactive apps for learning and exam revisions, videos, Wikipedia and Worldreader.



Content management

Local content (on server) and online educational platform (over internet) where teachers can select content and tools to help prepare lessons.



Training

Initial and ongoing training of coaches and teachers, including technical structuring of classroom and agenda in the school.

The opportunity



3.3 million refugee, IDP and host community children and adolescents by 2025, in countries hosting refugees where Vodafone operates and South Sudan



USD 618 million potential annual economic benefit by 2025



Potential to **improve the living conditions of 80% of young refugees** by 2025



Democratising education by providing access to the best educators to refugees in the most remote communities will have significant benefits for individuals, families and communities.

Potential reach

Our modelling found that if initiatives like Instant Network Schools would be deployed across Vodafone's markets hosting refugees and South Sudan, they could potentially reach more than 2.7 million refugees and IDPs by 2025, the majority of which would be in Turkey (1,017,000), DRC (775,000) and Kenya (221,000). In addition, they could benefit 554,000 children and youth of local host communities, leading to a total potential reach of close to 3.3 million by 2025.

Improved living conditions

If this initiative was deployed widely across all refugee camps in Vodafone markets worldwide (both in developing and developed countries and South Sudan), it would have the potential to improve living conditions for 80% of children living in refugee camps by 2025.

Economic benefits

Our research shows that each year of additional education adds to an individual's earnings, especially for low-income workers. If the programme is successfully scaled up to all Vodafone markets and South Sudan, it could generate around USD 618 million annual economic benefit by 2025.

Health benefits

Providing education to refugees will have a profound impact on their health as it will increase their knowledge of health services, health rights and healthy living. Education is a social determinant of health and will have a considerable impact on the health of refugees, IDPs and local host communities⁵⁴.

Looking ahead

The project was initially designed to cover refugee camps only, following a humanitarian mandate. To successfully scale it up to reach not only more refugee camps but also governmental schools across territories, additional funding and closer coordination with Ministries of Education would be required. The Vodafone Foundation is planning to deploy 36 Instant Network Schools to the benefit of 60,000 young refugees by the end of 2018.

UNHCR remains committed to ensuring access to quality learning opportunities for all displaced populations, through innovative initiatives like the Instant Network Schools. However, education remains one of the lowest funded sectors of humanitarian aid, receiving less than 2% of total humanitarian funding. Stretching these limited resources has been increasingly difficult with rising displacement trends. As a result, it is difficult to forecast the continuation of the programme beyond funding committed by the Vodafone Foundation until 2018. As the Instant Network Schools programme is embedded within the goals of UNHCR's education and connectivity strategies, efforts are being made to lobby for increased investments from the public and private sectors to support continuation and expansion, while ultimately helping to bridge the existing economic and social divides that refugees experience.



Innovation for us is not about developing educational products; rather it is about using technologies that partners like the Vodafone Foundation have to offer as a new way of identifying and testing solutions to enhance educational opportunities. ”

Olivier Delarue, former Innovation Lead, UNHCR

Jesuit Worldwide Learning

Offering tertiary education to those at the edges of society



Reached over **5,000 students** globally from more than **25 countries**



163 international faculty members and **49 universities** affiliated around the globe



Diploma in Liberal Studies after completing 45 credits of coursework

In 2015, there were almost 60 million people in forced human migration, many of whom faced barriers to access higher education. Jesuit Worldwide Learning is providing digital tertiary education to refugees and underserved communities, who would otherwise not have access to higher learning opportunities.

Key features

- ▶ Tertiary learning to people at the very edges of our societies
- ▶ No restrictions on the basis of age, race, religion or ethnicity
- ▶ Faculty drawn from institutions of higher education from around the world



Jesuit Worldwide Learning: Higher Education at the Margins (JWL) is a collaborative global partnership comprised of organisations, institutions, companies and people aiming to provide tertiary education. It targets people and communities at the very edges of our societies – due to poverty, location, lack of opportunity, conflict or forced displacement – to form a multi-ethnic, multi-cultural and multi-religious global community of learners. JWL seeks to offer regionally and globally accredited, high-quality curricula through virtual, blended and on-site learning experiences at affordable costs.

JWL was launched in 2010, supported by a private donor who financed a three-year pilot project. During the pilot phase, a sustainable, scalable, transferrable model was developed to ensure those who live 'at the margins' have access to higher education. In this phase, Jesuit Refugee Service (JRS) was the sole on-site partner in refugee camps and the most important academic partners were and still are Regis University in Colorado and Gonzaga University, though many universities have joined since then.

Today JWL is also based on strong partners in technology and IT such as Microsoft, Greenbridge and Internet2. JWL also partners with organisations such as the United Nations High Commissioner for Refugees, which provides facilities for the learning centres.

Between 2005 and 2016, more than 5,000 students studied in JWL programmes in 25 countries. The JWL academic programme includes both credit-bearing and certificate-level courses, which were developed through input from refugees and host community members, and with input from JRS, faculties and universities.

JWL courses are delivered in a virtual global classroom, where students learn in a virtual learning group of 15 students for each course. Often 8 to 10 countries are represented in each group, with a mix of Muslims, Christians, Buddhists and local religions. The academic content is delivered via online courses, and each learning group is accompanied and evaluated by one faculty member who is also in charge of giving the marks.

Students can access the virtual classroom from physical JWL learning centres across the globe, where there is a tutor available to support the students. The students have a lot of interaction within each learning group, among themselves and also with the teacher.



Jesuit Worldwide Learning

The diploma in liberal studies of JWL includes 45 credits of coursework over three years and is awarded by Regis University, which is regionally accredited by the Higher Learning Commission. The courses of the diploma programme begin with the Bridge to Learning course, followed by 10 courses in core liberal studies and five courses in a concentration area (business, education or social work).

JWL also developed vocational training courses that are awarded certificates based on the UNESCO standard of Technical Vocational Education and Training (TVET). Each vocational training course begins with a language course (French or English) and a community building course to prepare the students for the vocational programme.

The first JWL courses were offered through the pilot programme in 2010, and by 2014, JWL had designed and implemented its own curriculum for the diploma in liberal studies. As of 2016, JWL had 12 active learning centres across Asia, Africa, the Middle East and North America, with students from over 30 countries. Many of the students practise religions other than Christianity. For most, English is not their first language (in many cases it is their fourth or fifth) and this is their first contact with online learning, computers and the world of academia.

As students learn together in the virtual classroom, the curriculum transformation integrates authors and literature representative of Middle-Eastern thought, Western ideas, African theories, Asian principles, Latin American wisdom, and more.

In the three-year pilot, JWL offered the online diploma in Liberal Studies to refugees and host community members in Dzaleka refugee camp in Malawi, Kakuma refugee camp in north-west Kenya, and in the city of Amman, Jordan. In addition, by 2014 JWL had enabled refugees and host community members to study 25 different vocational trainings at all three pilot sites and in Aleppo, Syria, Afghanistan, Thailand and in Chad.



Jesuit Worldwide Learning

The opportunity



Aim to reach
10,000 students at a given
time in **3–5 years**



1/3 of graduates
accepted in other universities for
continued higher education



Improved job opportunities
in refugee camp
or hosting country



Jesuit Worldwide Learning

JWL believes tertiary learning and the formation of a global community of learners addresses the root causes of poverty, isolation, despair, conflict and displacement in order to build a more peaceful and humane world.

Potential reach

Between 2010 and 2016, over 5,000 students benefited from language courses, professional training and the academic course, the diploma in liberal arts. In 2017 JWL aims to support between 3,000 to 4,000 students, in partnership with awarding institutions. JWL is planning to scale up its activities to reach 10,000 students in 3 to 5 years at any given time and to diversify its academic and professional courses.

Increased continued higher education

Half of JWL's students enrol in the English course because English knowledge is the entry to the other courses and continued higher education. One-third of former graduates, known to JWL, have been accepted in other universities in the US, Canada, Finland, Israel, Kenya and Australia.

Improved job opportunities

English also opens up job opportunities in a refugee camp or hosting country. Partner organisations in the refugee camps in particular appreciate the quality of the JWL-trained teachers and psycho-social and youth workers. JWL reports that many of their trained students have moved on to a job.

Looking ahead

JWL intends to diversify as an organisation and partner with more international institutions and faculties in Europe, Asia and Africa, and later in Latin America. JWL aims to be a truly global community of learners with people living at the margins joining in and contributing to this world and transforming their own situation.

An important partner and need for JWL are financial partners. Working with the poor, JWL has a service model but not a 'business model' that creates revenue from the marginalised. JWL is seeking to engage with more substantial financial partners in order to sustain this service to the poor.

A major barrier has been the bandwidth available in most locations (most JWL learning sites operate on only 2 Mbps today). JWL hopes for collaboration with IT and telecommunications companies to be able to deliver its content on higher bandwidth and also to allow the students to connect directly through Skype or other tools.



Around 5,000 refugees have already benefited but we are going further today and want to address not only the refugees but all the women and men on the margins of society. Let us not take the 'smartest' elements out of their environment to place them in one of our great universities. Let us, on the contrary, train them at home. A singularity of hope. ”

Peter Balleis, S.J., Executive President,
Jesuit Worldwide Learning

Kiron Open Higher Education

Online higher education for refugees through MOOCs



Over **2,000 refugees**
registered on the platform



Partnership with
27 universities

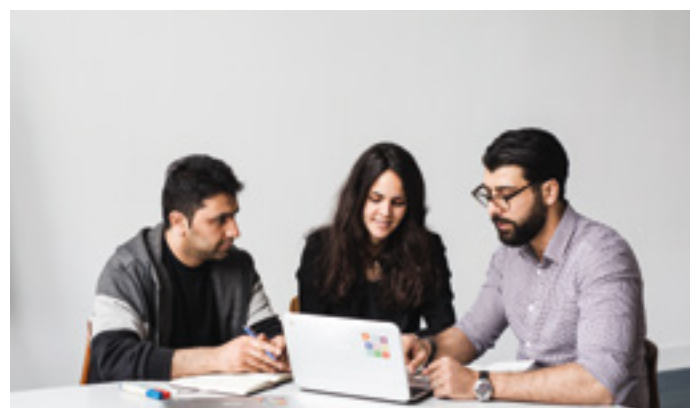


Five study tracks
available

Less than 1% of refugees globally have access to higher education. The process of seeking asylum means that refugees are unable to begin or continue their education, despite being motivated to learn. Kiron, a social start-up, is using an innovative combination of online and offline learning to provide refugees with accessible, sustainable and cost-effective education.

Key features

- ✦ Focus on higher education for refugees
- ✦ Online learning platform with asynchronous MOOC-based modules complemented with synchronous live tutorials
- ✦ Partnerships with leading MOOC-providers and universities
- ✦ Scalable business model for a global challenge



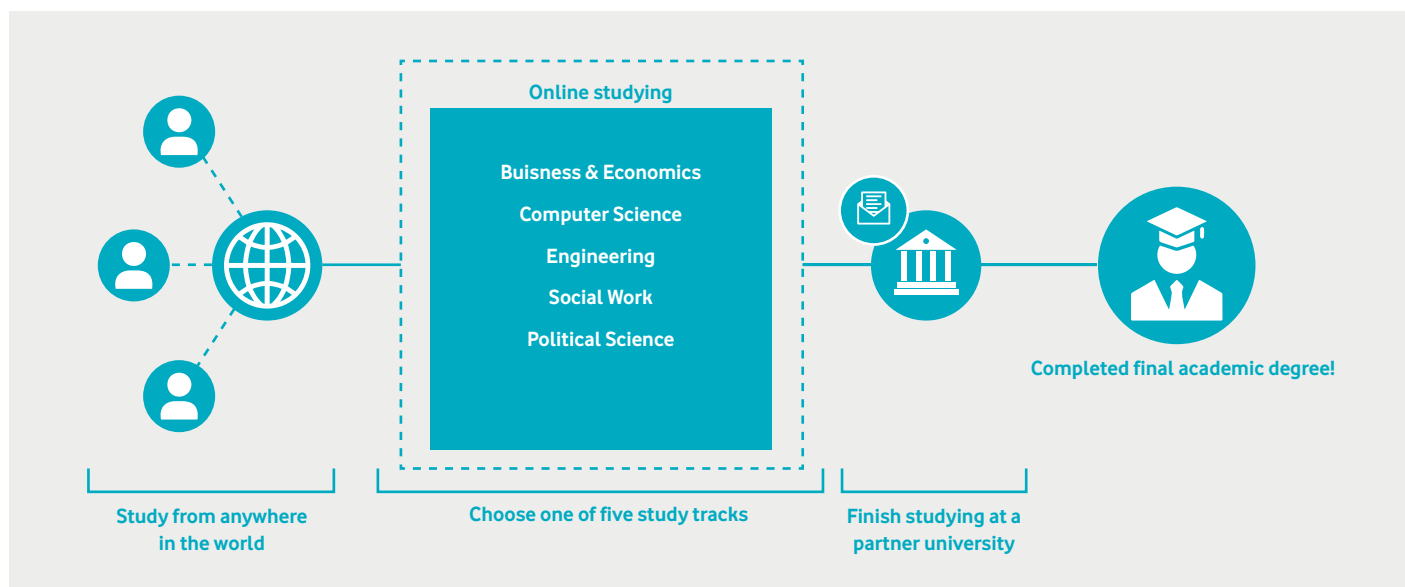
Kiron Open Higher Education is a non-profit organisation founded in 2015 by entrepreneurs Vincent Zimmer and Markus Kressler, with the mission to remove the barriers refugees face in accessing higher education. Through an innovative model of blended learning, Kiron offers tailor-made curricula of MOOCs (Massive Open Online Courses) through renowned educational platforms like Coursera and edX so that refugees can start studying, regardless of their asylum status.

Courses are mostly provided in English, completely free of charge for the students and all accessible via a learning platform, Kiron Campus. Through strong partnerships with accredited universities worldwide, students have the opportunity to finish their programme and obtain a regular bachelor's degree.

Kiron aims to foster integration in host countries and creates long-term perspectives for displaced people. Therefore, the

course curriculum is embedded in an ecosystem of support services, centred around the student's needs. This includes a language school, buddy and mentoring programmes, and a career service as well as physical study centres run by local groups and partners where students can meet and use hardware and internet connectivity. Kiron is financed by foundations and public funding, as well as private and corporate donations.

Kiron offers more than just online learning. With a diverse range of partners, the initiative strives to create an educational model that is more accessible, more human-centred, and more supportive of personal growth. Kiron follows the belief that education is key to alleviating the world's most critical issues. To this end, the driving vision is to implement a model through which refugees, regardless of their legal status, location, and social background, have access to higher education.



Kiron's study plan has been divided into two stages, online and offline. The online courses enable refugees to follow classes from anywhere in the world and according to their own schedule. The courses on Kiron's platform are designed as MOOCs, one of the most exciting innovations in education of the last few years. The MOOCs found on the Kiron platform have been designed by leading universities such as Harvard, Stanford and MIT, ensuring the students' key learning outcomes are in line with that of world-renowned institutions of higher education.

Kiron currently offers five study tracks to choose from: Business & Economics, Computer Science, Engineering, Social Work and Political Science. Once a student has chosen his or her study track, they can enrol in the relevant online modules that will count towards a degree at one of Kiron's partner universities.

In October 2015, seven months after the launch of the initiative, the first refugees started using Kiron to complete their studies. Today there are over 2,000 students on the campus platform, with complete access to the courses. The fast development of the project was enabled not only through financial support but particularly by a large number of highly engaged volunteers. Today, a team of 80 employees receives further support from about 400 volunteers worldwide and a competence pool consisting of experts from relevant fields, such as professors, psychologists and business specialists.

While the online platform Kiron Campus is available worldwide, Kiron is in the process of rolling out its student services and academic partnerships with a particular focus on refugee communities in Germany, France, Turkey and Jordan. The 27 partner universities recognise Kiron's online classes through established learning agreements that are in line with the Lisbon Convention. Kiron's network of partner universities is currently made up of 20 partner universities in Germany, two in France, three in Jordan, one in Italy, and one online university.

While Kiron is currently funded through sponsoring, donations and grants, a sustainable business model is planned to be developed and implemented by 2018. The current funds come through three channels:

- 1 private and corporate donations, where the initiative has run one of the most successful social crowdfunding campaigns in Europe;
- 2 public grants and foundations, where Kiron receives financial support from public institutions and foundations for a sustainable sponsorship; and
- 3 reverse inter-generational contracts, where financial support from future student generations comes through graduates and corporations.



The opportunity



Opportunity to receive an **internationally accepted degree**



Kiron's **cost per student is around 5%** of normal government spending



Ability to **'test drive' courses online** before deciding on a degree programme



Kiron's work has a positive impact not only for refugees but also for society, the economy and the education system.

Benefits for refugees

One key advantage of the Kiron model is the flexibility it gives to students. Refugees with families can study from home in their free time. In addition, no time is lost while waiting for their legal status in the host country to be finalised, which means that students can study throughout this period, graduate earlier and contribute to their hosting society sooner. Receiving an internationally accepted degree eases integration into their host community, and gives the potential opportunity to participate in rebuilding their home countries for the generations to come.

Benefits for society

Research shows that educated people tend to be more productive members of society, less extreme in their political or religious views and integrate more easily into new environments. Because the majority of Kiron's content is online, Kiron's cost per student is around 5% of normal government spending. By significantly lowering tuition costs, speeding up the integration process and aiding refugees in finding employment, Kiron can help host country governments and infrastructures cope with the global refugee crisis. Society will also gain skilled, responsible and entrepreneurial citizens.

Benefits for pedagogy

Kiron's blended learning concept is considered by some the future of academic education. Traditional universities and other educational institutions can therefore learn from the more accessible and interactive education model piloted by Kiron. For example, Kiron students are capable of making more informed choices by being able to 'test drive' courses online before deciding on a degree programme. This idea could easily be extended to traditional universities and would increase student wellbeing and society's productivity.

Looking ahead

Kiron empowers refugees to live a self-determined life by empowering them to study. The goal is to not only enable students to access the local and international labour market but also to provide the assets necessary for social integration at large.

In order to scale up this initiative and make it available to a large population, Kiron is seeking partnerships with universities across the globe. Kiron is pursuing its proof of concept internationally until 2018. This includes Germany, France, Turkey and Jordan. In these countries, Kiron is operating with a team on the ground with the aim to support students to obtain a university degree, while it establishes university partnerships.

Even though the Kiron platform is accessible globally, the transfer to a partner university can only be achieved for students studying in one of the four countries until 2018. At a later stage post 2018, Kiron will scale across further countries in Europe, the Middle East as well as Africa, followed by North America and Asia.



We want to flourish; we don't want to be a crisis. We want to be the solution, to do something for society, for the planet. For that, education is the only option. Kiron is hope for us, it means we get up in the morning in hope, we go to sleep in hope. ”

Kashif, Kiron student

Key findings and looking ahead

Education is the most powerful lever for individual wellbeing, equality and economic growth. It is a fundamental element of social justice unleashing individual talent and elevating societies to a more prosperous future.

We have identified a number of important gaps that still have to be addressed to achieve universal quality education, ranging from problematic regions such as sub-Saharan Africa to unequal access for disadvantaged population groups such as refugees, the poor, the disabled and even females. This study has shown how education programmes can address these challenges by making use of technology that can support, enhance or enable educational opportunities and practices, as illustrated in Figure 11.

Technology including connectivity is a powerful tool to address some of the challenges – but in the end it only remains a tool – its actual impact is very much dependent on the quality of the content it helps to disseminate and on the quality of the education infrastructure it supports.

Scaling up these education initiatives making use of technology can lead to a large number of benefits as the report has illustrated, which can be grouped in three categories (see Figure 12): improving the reach, the learning experience and the learning outcome. This in turn will improve the reach for the next generation (as educated parents are more likely to send their children to school and actively participate in their education).

Figure 11: Role of technology in education

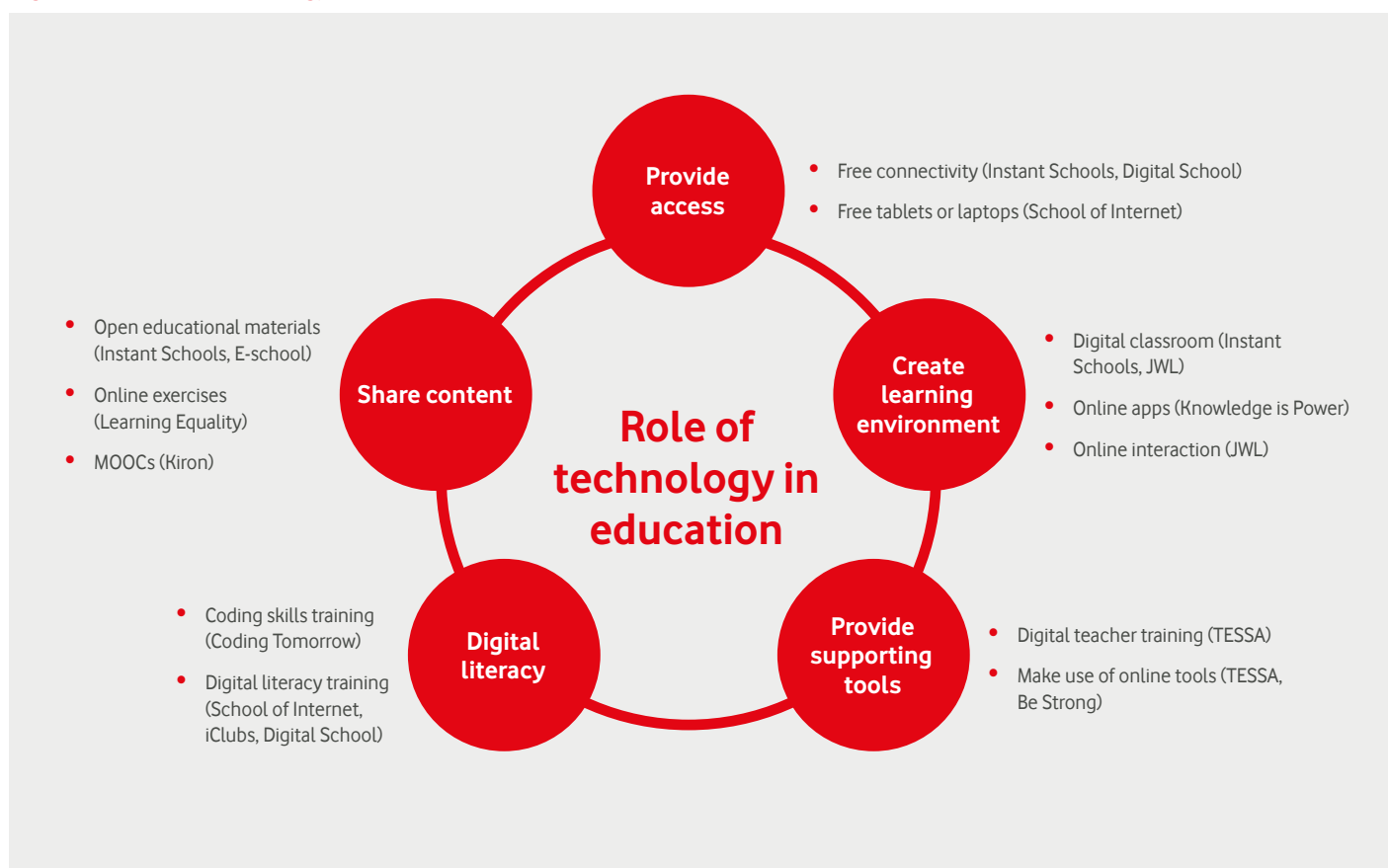
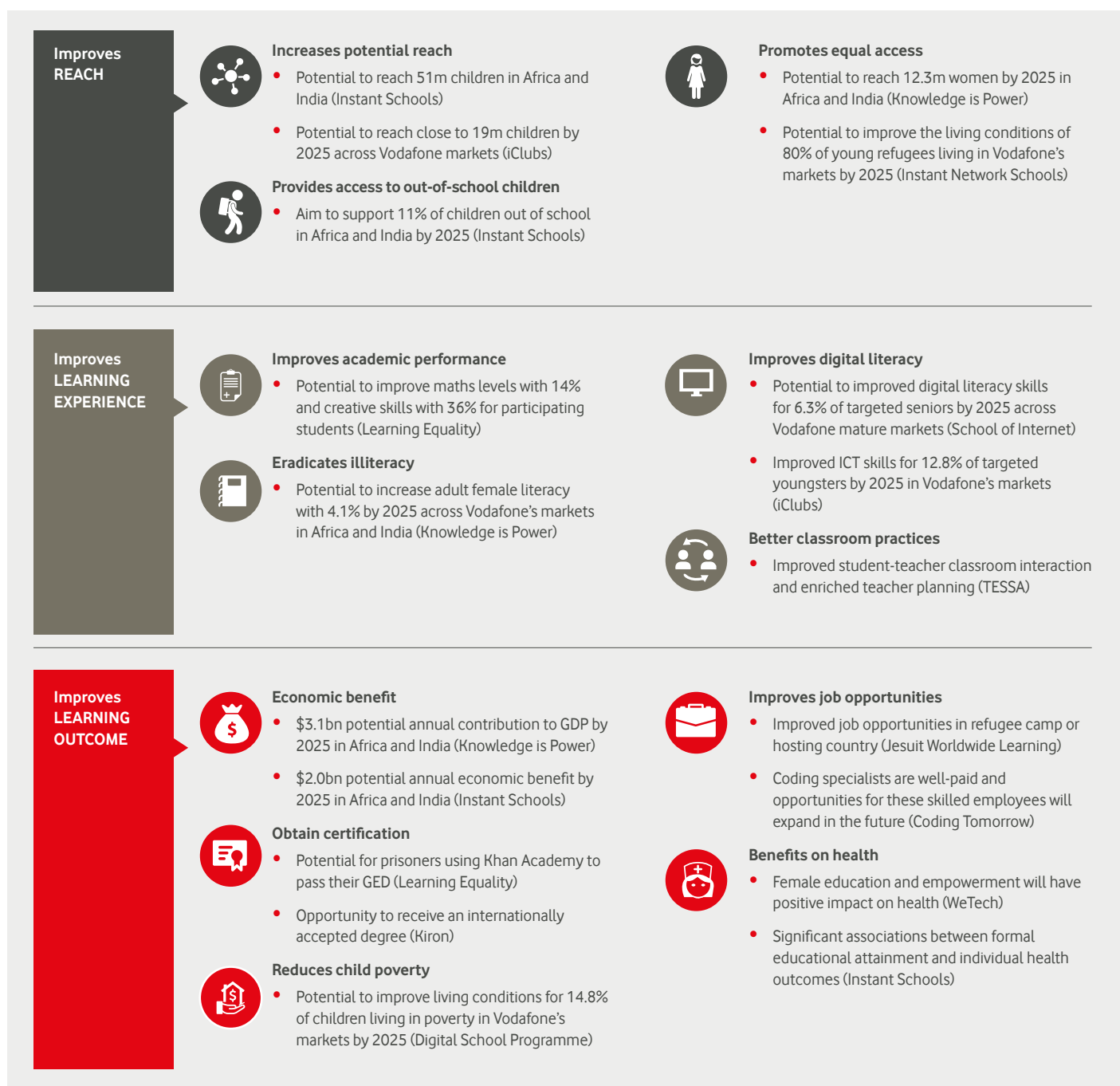
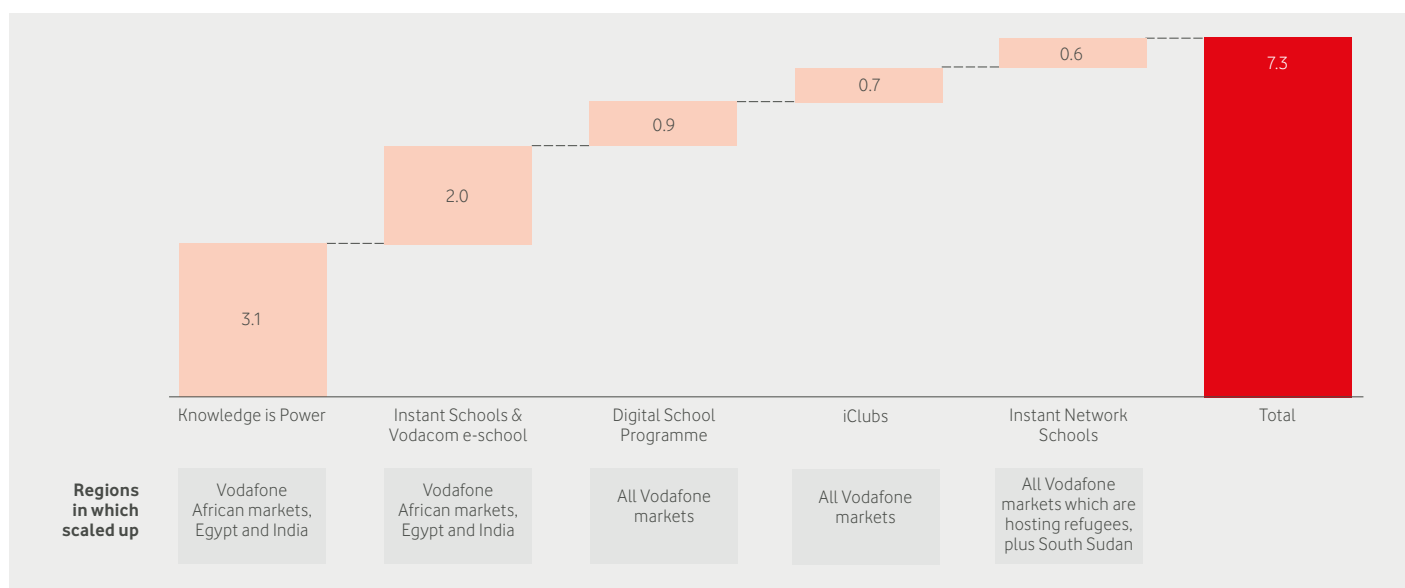


Figure 12: Benefits of technology in education

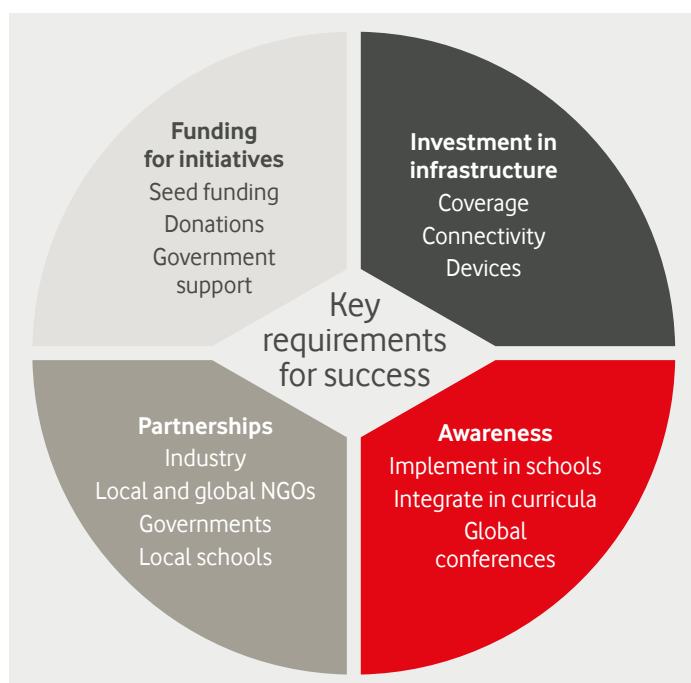


This *Connected Education* report shows the wealth of Vodafone-led initiatives in the field of education and comparable programmes. A compelling way to illustrate the enormous potential of these initiatives is to sum up the projected future economic impact if all the programmes were scaled across all appropriate Vodafone

markets. This leads to potential annual economic benefits of USD 7.3 billion – against the backdrop that potential does not mean certainty (and against the fact that scaling one programme could imply dropping another established one).

Figure 13: Annual economic benefit (annual by 2025, billion USD)

The report also showed that a number of key requirements have to be in place to successfully implement and scale up these education initiatives making use of technology as illustrated in the figure below.

Figure 14: Key requirements for success of education initiatives

The most important requirement recurring across all initiatives is the need for funding. However, it is difficult for education initiatives to produce a proof of concept and gather evidence on the impact when it is still at an early stage, and where there is no

equivalent parallel initiative with which to compare. Funders should therefore support education initiatives even when there is no clear outcome, and connect them with mentors and partners to help them scaling up.

In addition to funding, some initiatives also showed that there is an issue of uneven internet connectivity within countries to the detriment of people living in disadvantaged neighbourhoods. Modern computers are often lacking in disadvantaged schools so significant investment in infrastructure is needed. Private investments or public-private partnerships should therefore be incentivised to achieve affordable access to education services. The rollout of high-capacity fibre connections to schools and educational institutions could be a way to increase access as the fibre connection would then be available to connect mobile base stations to provide mobile broadband services in previously unserved communities, including groups of learners.

The initiatives also highlighted that working in partnerships with industry players, schools, NGOs and governments is essential to scaling out the programme and to supplement resources and funding. Working with existing partners and local players will also open access to quality education materials aligned to national curriculum and local language which is key to the success of the programme. Collaborating with governmental schools and the national Ministries of Education will enable nationwide scale out and deployment in schools.

Finally, in order to become sustainable, several education initiatives highlighted the need to raise general awareness on their impact on the value of digital literacy. Governments can play an important role in this by, for example, integrating initiatives into schools or even incorporate them in national curricula of the education system (as is happening with teaching on coding).

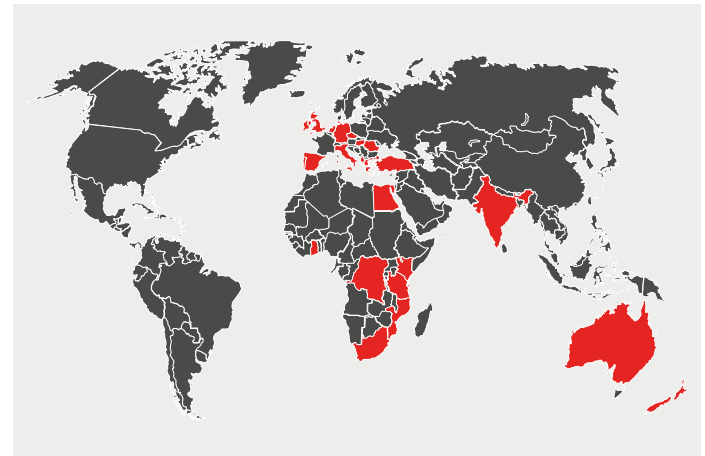
Appendix 1: Methodology

For each of the Vodafone-sponsored initiatives we have modelled at a high level the potential reach and economic impact. We still see the need for a deep dive impact assessment, yet are convinced that our outcome analysis has already delivered robust indicators of success from many of these schemes.

We have followed the same approach for estimating the potential reach for each of the initiatives. We have estimated the service take-up for each initiative separately, based on historical service take-up, forecasted service take-up, information gathered through surveys and a selected number of interviews to assess the cumulative reach by 2025 in the geography that the initiative is currently focusing on. We also estimated the cumulative potential reach by 2025 if the initiative was scaled up to other relevant Vodafone markets (developing, developed or both):

- **Developing markets:** India, DRC, Egypt, Fiji, Ghana, Kenya, Lesotho, Mozambique, Qatar, South Africa, Tanzania, Turkey
- **Developed markets:** Albania, Australia, Czech Republic, Germany, Greece, Hungary, Ireland, Italy, Malta, Netherlands, New Zealand, Portugal, Romania, Spain, UK.

Figure 14: Vodafone markets used for modelling



We calculated the economic benefit, by estimating the combined impact that the potentially reached target group could have by 2025, through increased employment and increased wages, based on data from existing research. Key data points were collected from available sources and assumptions made to address data gaps and project key data points to 2025.

Table 1: Key data points and sources

Category	Population per country	United Nations
Potential reach	Population by age group	United Nations
	Population by gender	United Nations
	Population growth	United Nations
	Children living in child poverty	UNICEF
	Out-of-school children	UNICEF
	Illiteracy rates (per gender and age group)	UNESCO
	Daily internet use (per age category)	Eurostat
	Refugees hosted per country	UNHCR
Economic impact	Minimum wage	International Labour Organization
	GDP per country	IMF
	Exchange rates	OANDA

For each Vodafone initiative, individually we have made specific assumptions to estimate the opportunity by 2025, based on market research and a selected number of interviews with experts.

Table 2: Key assumptions for modelling of opportunity per initiative

Initiative	Key assumptions
Instant Schools & Vodacom e-school	<p>Potential reach</p> <ul style="list-style-type: none"> Vodacom e-school (South-Africa) service take-up <ul style="list-style-type: none"> – 185,000 registrations by Q4 2016 – 15,000 new registrations per month (180,000 per year) Same proportional service take-up as of 2017 assumed for Instant Schools for Africa as Vodacom e-school in African Vodafone markets and India <ul style="list-style-type: none"> – i.e. same % of children aged 5–18 will register on the Instant Schools for Africa platform (both in school and out of school) as the % in South Africa <p>Economic impact</p> <ul style="list-style-type: none"> Students who will have graduated by 2025, will benefit from a salary uplift of 15% (country minimum wage used as base)⁵⁵ <p>Out-of-school children reached</p> <ul style="list-style-type: none"> 16% of children reached are estimated to be out of school (i.e. average out-of-school ratio across African Vodafone markets and India)⁵⁶
Knowledge is Power	<p>Potential reach</p> <ul style="list-style-type: none"> Knowledge is Power (Egypt) service take-up <ul style="list-style-type: none"> – 480,000 enrolled since 2011 (of which 70% females) – 120,000 new enrolments per year expected Same proportional service take-up assumed as of 2017 across African Vodafone markets and India <ul style="list-style-type: none"> – i.e. same % of illiterate adult females (+15) will enrol each year in initiatives like Knowledge is Power as in Egypt <p>Economic impact</p> <ul style="list-style-type: none"> Market research shows that the cost of illiteracy to a country equals 1.2% of its GDP in developing countries⁵⁷ <p>Improvement in adult female literacy</p> <ul style="list-style-type: none"> Adult female illiteracy rates across African Vodafone markets and India is 39%⁵⁸ (i.e. total of 224 million) 75% of illiterate adult females enrolled in the programme are expected to graduate (and become literate)
School of Internet	<p>Potential reach</p> <ul style="list-style-type: none"> School of Internet (Italy) service take-up <ul style="list-style-type: none"> – 205,000 seniors subscribed in 2014 and 2015 – 102,000 new enrolments per year expected Same proportional service take-up assumed as of 2017 across Vodafone's developed markets <ul style="list-style-type: none"> – i.e. same % of seniors (+55) who do not use the internet on a daily basis will enrol in initiatives like School of Internet <p>Improved adult digital literacy skills</p> <ul style="list-style-type: none"> Total seniors (+55) in Vodafone's developed markets who do not use the internet on a daily basis = 77.3 million

Initiative	Key assumptions
Digital School Programme	<p>Potential reach</p> <ul style="list-style-type: none"> Digital School Programme (Hungary) service take-up <ul style="list-style-type: none"> 6,500 children aged 6–14 enrolled in 2016 (covering eight grades) 813 new enrolments per year expected Same proportional service take-up assumed as of 2017 across all Vodafone markets globally <ul style="list-style-type: none"> i.e. same % of underprivileged children (6–14) will enrol in initiatives like the Digital School Programme <p>Economic impact</p> <ul style="list-style-type: none"> Research shows that 32% of graduates with a degree in ICT have access to a better job with a salary increase of 16%⁴¹ Graduation rate is expected to be 70% <p>Improved conditions for deprived children</p> <ul style="list-style-type: none"> 35% of children (6–14) living in all Vodafone markets globally are living in poverty (121 million)⁵⁹
Vodafone Albania iClubs	<p>Potential reach</p> <ul style="list-style-type: none"> iClubs programme (Albania) service take-up <ul style="list-style-type: none"> 800 children aged 15–18 enrolled in 2015 and 2016 3,200 new enrolments per year expected (target for 2017) Same proportional service take-up assumed as of 2017 across Vodafone's markets globally <ul style="list-style-type: none"> i.e. same % of youth (15–18) will enrol in initiatives like the iClubs <p>Economic impact</p> <ul style="list-style-type: none"> Research shows that 32% of graduates with a degree in ICT have access to a better job with a salary increase of 16%⁴¹ <p>Improved ICT skills for targeted youth</p> <ul style="list-style-type: none"> 150 million adolescents (15–18) are living in Vodafone's markets globally <ul style="list-style-type: none"> 19 million children reached by 2025 represents 12.8%
Instant Network Schools	<p>Potential reach</p> <ul style="list-style-type: none"> Instant Network Schools service take-up <ul style="list-style-type: none"> 40,000 refugees aged 7 to 25 years old reached in 2014–2016 (Kenya, Tanzania, DRC and South Sudan) expected to reach 70,000 refugees by the end of 2018 Same proportional service take-up assumed across Vodafone's markets globally (which are hosting refugees) from 2017 till 2018, and assumed gradual take-up so that by 2025 80% of current school-age refugees would be reached <ul style="list-style-type: none"> i.e. same % of refugees (7–25, including IDPs in DRC) hosted in each respective country will enrol in initiatives like the Instant Network Schools Instant Network Schools will also be further deployed in local host communities. We assumed that for five refugee (or IDP) children enrolled in INS, one child from the local host community would benefit from the programme as well <p>Economic benefit</p> <ul style="list-style-type: none"> 70% of refugees (and IDPs in DRC) enrolled in Instant Network Schools are expected to graduate, and earn the minimum wage of the hosting country Students from local host communities attending INS who will have graduated by 2025 will benefit from a salary uplift of 15% (country minimum wage used as base)⁵⁵

Appendix 2: References

1. United Nations, The Millennium Development Goals Report, 2015
2. UNESCO, Leaving no one behind: How far on the way to universal primary and secondary education, 2016
3. UNESCO, World Inequality Database on Education, Data from HDS, 2011
4. The World Bank, Half of Youth in Sub-Saharan Africa Are Out of School, 2015
5. MDG 2015 report, UNESCO Institute for Statistics
6. UNESCO Institute for Statistics database, 2015
7. World Bank, Education in Sub-Saharan Africa, 2012
8. Human Development Index is a measure of economic development and economic welfare and examines three criteria: life expectancy, education and income levels
9. DHS, 2011
10. USAID, Education, 2017
11. UNESCO, No country in sub-Saharan Africa has achieved gender parity in both primary and secondary education, 2015
12. UNESCO, GENDER AND EFA 2000-2015: achievements and challenges, 2015
13. UNESCO, Girls' education – the facts, 2013
14. Missing Out: Refugee Education in Crisis, UNHCR, 2015
15. The Digitalisation of Education, A peek into the investment required for Europe's e-learning ecosystem, Benjamin Vedrenne-Cloquet, 2013
16. Towards a more equal world: the mobile internet revolution, Vodafone Group
17. What are the educational benefits of e-learning, Katharina Schaden, 2013
18. The Education Effect on Population Health: A Reassessment, David P. Baker, Juan Leon, 2011
19. International Telecommunication Union (ITU), World Bank, United Nations Population Division, Worldometers
20. Bibliothèques Sans Frontières, Transforming Education: preliminary results from the study carried out in Cameroon on the impact of the Khan Academy on children's academic achievement and cognitive abilities, 2014
21. GALAE: General Authority for Literacy and Adult Education
22. Egypt Central Agency for Public Mobilization and Statistics (CAPMAS), 2014
23. United Nations, Department of Economic and Social Affairs, Population Division (2015); UNESCO, Institute for Statistics, 2015
24. World Literacy Foundation, The Economic & Social Cost of Illiteracy, 2015
25. UNESCO, Girls' education – the facts, 2013
26. Parents' Literacy and Their Children's Success in School: Recent Research, Promising Practices, and Research Implications, Benjamin, L. Ann, 1993
27. Empirica working paper, e-Skills in Europe, Trends and Forecasts for the European ICT Professional and Digital Leadership Labour Markets (2015-2020), 2015
28. Digitalization, jobs, and convergence in Europe: strategies for closing the skills gap, Thor Berger, Carl Benedikt Frey (Prepared for the European Commission), 2016
29. UK facing 'digital skills crisis' warn MPs, BBC, 2016
30. Technology skills training critical to employ low-income youth, Fiona Macaulay, 2014
31. European Commission, Eurostat Statistics Explained, People in the EU – Statistics on an ageing society, 2015
32. A review on internet use and quality of life of the elderly, Hayat Boz, Sibel Esra Karatas, 2015
33. E-learning Industry, 4 Benefits Of Learning Programming At A Young Age, 2016
34. U.S. Bureau of Labor Statistics 2012; Australian Bureau of Statistics, 2011
35. OECD, Skills Matter, 2016
36. Vodafone Italy Foundation, Insieme a scuola di internet, September 2015
37. OECD Broadband statistics, June 2016
38. <https://ec.europa.eu/digital-single-market/en/digital-inclusion-better-eu-society>
39. www.fundacionvodafoneconlosmayores.com
40. European Commission, EDPR report, 2016
41. The Impact of Synchronous Inter-Networked Teacher Training in ICT Integration, Michael Vallance, 2006
42. Science, Technology, Engineering and Mathematics
43. Clinton Global Initiative
44. U.S. Bureau of Labor Statistics, "By 2020, there will be 1.5 million computer-related jobs in the United States alone"
45. McKinsey & Company, Women Matter, 2014
46. Organization for Economic Cooperation and Development (OECD), Gender Equality in Education, Employment and Entrepreneurship: Final Report to the MCM, 2012
47. Actionaid, "Close the Gap! The cost of inequality in women's work," 2015
48. E. Gakidou, et al., 2010, "Increased Educational Attainment and its Effect on Child Mortality in 175 Countries between 1970 and 2009: A Systematic Analysis,"
49. Ethiopian Journal of Health Sciences. 25(4):353-62, 2015 Oct
50. UNESCO Institute for Statistics, World Teachers Day 2016
51. Wright, S. P., Horn, S. P., & Sanders, W. L. (1997). Teacher and classroom context effects on student achievement: Implications for teacher evaluation - Jordan, H., Mendro, R., & Weerasinghe, D. (1997, July). Teacher effects on longitudinal student achievement - Aaronson, Barrow, and Sander, 2007, Rivkin et al. 2005 and Rockoff 2004, Slater, Davies and Burgess 2009 - Improving the impact of teachers on pupil achievement in the UK – interim findings, 2011
52. UNESCO: http://www.unesco.org/new/en/education/themes/education-building-blocks/teacher-education/single-view/news/unesco_partners_with_gems_education_to_bolster_teacher_training/
53. UNHCR, Refugee Education, A Global Review, 2011
54. Understanding the Relationship Between Education and Health, Emily B. Zimmerman, Steven H. Woolf, and Amber Haley
55. Psacharopoulos & Patrinos, 2002
56. UNICEF, Out-of-school rate for children of primary school age
57. World Literacy Foundation (WLF)
58. UNESCO adult illiteracy statistics
59. UNICEF child poverty statistics

Acknowledgements

Vodafone key contributors

- Ebenezer Amankwah Foundation and Sustainability Manager, Vodafone Ghana
- Rabia Awasi Senior Specialist, Vodacom
- Chiara Bondioli Sustainability Reporting and Communication, Vodafone Italy
- Paul Cording Consumer Services, Group Public Policy, Vodafone Group
- David Markus Deissner Director Strategy and Programmes, Vodafone Institute
- Andrew Dunnett Director, Vodafone Foundation
- Lisa Felton Head of Consumer Policy, Group External Affairs, Vodafone Group
- Annette Fergusson Head of Sustainable Business, Vodafone Group
- Albi Greva Executive Director, Vodafone Albania Foundation
- Paul Morris Head of Government Affairs & Sustainability, Vodafone
- Renatus Rwehikiza Head of Vodacom Foundation Tanzania
- Catherine Russell Senior Corporate Sustainability Manager, Vodafone UK
- Sara Sedky Vodafone Egypt Foundation Senior Supervisor
- Marc Speich Managing Director, Vodafone Foundation Germany and Vodafone Institute
- Tugba Unal Secretary General, Vodafone Turkey Foundation
- Oisin Walton Instant Network Programme Manager, Vodafone Foundation

Key expert contributors

- Anthony Bloom, Senior Education Technology Specialist, USAID
- Mary Mendenhall, Teachers College, Columbia University, New York
- Ita Sheehy, Head of Education, UNHCR
- Jackie Strecker, Learn Lab Manager, UNHCR
- Steve Vosloo, Programme Specialist in Mobile Learning, UNESCO

External contributors

We would like to thank all the individuals and organisations who have shared their insights for this report, in particular the organisations who agreed to be featured as a case study. These include:

- Be Strong
- Coding Tomorrow
- *Digital Parenting* magazine
- Digital School Programme
- iClubs
- Instant Network Schools
- Instant Schools For Africa
- Jesuit Worldwide Learning (JWL)
- Kiron
- Knowledge is Power
- Learning Equality
- Qualcomm
- School of Internet
- TESSA
- University of Columbia
- UNESCO
- UNHCR
- Vodacom e-school
- WeTech

Vodafone Foundation
Registered Office:
Vodafone House
The Connection
Newbury
Berkshire
RG14 2FN

www.vodafone.com

UK registered charity number 1089625

© 2017 Vodafone Foundation

Published June 2017