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The Internet for Everyone

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I. Introduction

The founder of Facebook, Mark Zuckerberg, and the Microsoft billionaire, Bill Gates, have called for everyone in the world to be connected to the internet by 2020 (Chanthadavong, 2016). However, questions arise as to whether or not this plan is possible within the stated time frame, and also, whether or not universal access to the internet is possible at all.

Firstly, the large number of people not connected to the internet is a problem in itself. More than half of the world's population (54 per cent, or 3,424,971,737 people) is currently not connected (Internetlivestats.com, 2016). But even more significantly, this 54 per cent is largely disadvantaged, and as the following figures demonstrate, this proportion of the world is vastly more underprivileged than populations in countries with high internet penetration.

The lowest internet penetration rates coincide with areas of the poorest people on earth. For example, in 2015, the lowest internet penetration rates were in Africa (28.6 per cent), Asia (40.2 per cent) and the Middle East (52.2 per cent).

About Education reported in 2015 that the three countries with the world's lowest life expectancies were also from one of the areas identified as suffering from extreme poverty and low internet penetration (Sub-Saharan Africa). The countries with the lowest life expectancies are Swaziland (33.2 years), Botswana (33.9 years) and Lesotho (34.5 years) (Rosenberg, 2016).

The World Bank estimated that more than a billion people lived in extreme poverty in 2015. According to USAID, 96 per cent of these reside in South Asia, Sub-Saharan Africa, the West Indies, East Asia and the Pacific. Nearly half of this more than one billion live in India and China (Getting to Zero, 2013).

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Extreme poverty is defined by the World Bank as earning below the international poverty line of $1.25/day. This measure was the equivalent to earning $1.00 a day in 1996 US prices, hence the widely used expression, living on "less than a dollar a day." (Ravallion, *et al*., 2008).

II. Impact of Poverty

In the most disadvantaged parts of the world, it is likely that the struggle to find food would be a higher priority than connecting to the internet. For example, according to the World Bank, hunger and poor health militate against the ability of children to stay alert and be able to learn in school. World Hunger estimates that 66 million primary school-age children attend classes hungry across the developing world, with 23 million in Africa alone (wfp.org, n.d.).

The struggle to stay alive is an even more urgent priority. According to the World Bank, babies in the developing world are much more likely to die within their first year than are those in high-income countries. This is because of lack of adequate food, poor health and unsanitary conditions (*ibid*.).

Areas of extreme poverty and hunger also coincide with areas in which there is a shortage of water, and in which existing water sources are frequently contaminated. Water contamination is a problem for one billion people - the equivalent of 1 in 8 people on the planet, and the world Water Project also links lack of access to clean water to extreme poverty (The Water Project, 2016).

Such water problems not only lead to poor health, but also the inability to stay in school, grow food, build housing, or continue working. The United Nations estimates that Sub-Saharan Africa alone loses 40 billion hours per year collecting water - the same amount of time as a whole year's worth of labour by France's entire workforce (*ibid*.).

Finding clean water is one problem, but finding potable water at all, is a more serious problem. Bank of America Merrill Lynch BAML points out that the shortage of water caused by climate change is ‘number one in terms of impact in the World Economic Forum's annual report on global risks’. According to Ferro (2015), the global water crisis is not a matter of regional drought. ‘It's a secular trend that is eventually going to affect almost everyone on the planet: what we eat, how we eat, who has enough to eat, and even how our food tastes.’

III. Climate Change, Conflict and War

Climate change is further exacerbating global food shortages and hunger, threatening health and income, and leading to lower life spans. A 2014 report by the Intergovernmental Panel on

Climate Change (IPCC) warns that climate change has already cut into the global food supply and is fuelling wars and natural disasters. In addition, this Panel warns that governments are unprepared to protect those most at risk (The Water Project, 2016).

The IPCC bases its finding in part on global warming, and notes that anthropomorphic and industrial activity since the beginning of the industrial revolution has led to global warming that is 'unequivocal', and that since the 1950s, has also led to changes that are 'unprecedented over decades'. These changes have led to warming of the oceans, melting of ice caps, and rising sea levels. This, in turn, is projected to undermine food security, reduce marine biodiversity and challenge sustained provision of fisheries. Crops of wheat, rice and maize will be particularly hit by temperature increases (*ibid*.)

A look into the future is not reassuring. In the coming decades, at least one-quarter of the world's wheat production will be lost to extreme weather from climate change if no remedial measures are taken, according to Tammen (2015). Wheat yields are projected to decrease by 6 percent for each degree Celsius of temperature rise, which means there will be 42 million tons less wheat produced per degree of temperature increase. To put this in perspective, this amount is equal to a quarter of the global wheat trade, which reached 147 million tons in 2013 (*ibid*.).

Climate change, water scarcity and consequent rises in food prices also exacerbate the risk of conflict, whether civil war or fights between nation states over critical resources or boundaries, according to Biello (2014). In short, 'climate change will make remedying existing poverty that much more difficult' (*ibid*.)

The world refugee problem is also exacerbating access to food, shelter and education. World Vision notes that between 2 million and 3 million Syrian children are not attending school and the U.N. children's agency says the war has reversed 10 years of progress in education for Syrian children (World Vision, 2016).

World Vision also notes that refugee children are susceptible to malnutrition and diseases brought on by poor sanitation, and that many refugee children do not have the option of education, because they need to work to support their families. Often they labour in dangerous or demeaning circumstances (*ibid*.).

This situation is getting worse, according to the Global Peace Index. Apart from the 100,000 killed in conflict in 2014 (up from nearly 20,000 in 2008) the United Nations estimates the number of displaced people is likely to far surpass the record 60 million in 2015 (Reuters India,

2016). ‘One in every 113 people on the planet is now a refugee, asylum-seeker or internally displace in a home country… (and) half of them are children’ (Reuters, 2016).

Also, “countries torn apart by conflict pay a huge toll in their capacity to govern” says Huguette Labelle, chairman of Transparency International. “With public institutions crippled or nonexistent, mercenary individuals help themselves to public resources, and corruption thrives” (Farrell and Moyer, 2016).

IV. Illiteracy

Illiteracy is another hurdle to overcome before being able to use the internet. According to Jenkins (2014) one in five people in the world are illiterate, and two thirds of these are women. Ninety eight percent of these illiterate people are concentrated in three key areas: South and West Asia, Sub-Saharan Africa, and the Arab States. Africa as a continent has less than a 60 per cent literacy rate.

Even assuming that this illiterate one-fifth of the world’s population could be taught to read and write within four years, and even assuming that this group could afford internet access (a big assumption), the question of digital literacy is yet another hurdle. This is because educationists consider that digital literacy is more than the combination of these two words. According to Jenkins (2009) ‘digital information is a symbolic representation of data, and literacy refers to the more complicated ability to read for knowledge, write coherently, and think critically about the written word’.

In OECD research, the term Digital Competence is preferred over literacy due to its holistic use. In 2013, the European Commission published a Digital Competence Framework (*DIGCOMP: A Framework for Developing and Understanding Digital Competence in Europe*) that not only also includes the notion of digital literacy, but goes even further by defining problem solving in digital environments as part of digital competence (Is.jrc.ec.europa.eu, 2016).

A precondition for such digital competence is a basic education. Yet UNESCO reports that in total, 121 million children and adolescents have never started school or have dropped out. This is despite the international community’s promise to achieve universal primary education by 2015. Data shows that there has been almost no progress in reducing this number since 2007 (Uis.unesco.org, 2015).

Children living in conflict, child labourers and those facing discrimination based on ethnicity, gender and disability are the most marginalised.

According to UNESCO, if current trends continue, 25 million children – 15 million girls and 10 million boys - are likely to never set foot inside a classroom (Uis.unesco.org, 2015).

The ability to read and write, and to become digitally literate, is not something that can be accomplished quickly, although Facebook founder Mark Zuckerberg believes that "When communities are connected (to the internet), we can lift them out of poverty" (Garcia, 2016).

However, the above figures relating to poverty and illiteracy indicate that the problem is better addressed the other way around - lifting people out of poverty would need to precede internet access.

V. Case Study: One Laptop per Child

An illustrative case study involving attempts to provide laptops to children in the developing world (and to provide internet connectivity) was the One Laptop Per Child project (OLPC). This project, conceived by the Massachusetts Institute of Technology Media Lab, aimed to produce a rugged, low-cost laptop cased in weatherproof rubber, including a manual crank to recharge the batters if there was no local power source available.

The initial aim was to manufacture such a laptop for one hundred dollars, although eventually, this cost was not able to be kept below two hundred dollars per unit (Fildes, 2010). Subsequently, the OLPC initiative became bogged down by proprietary software and hardware problems, and also technical problems (Shah, 2008).

The project was also criticized for its cultural assumptions, which included a policy of 'walking away' after providing the original laptop. African representatives to the World Summit on the Information Society in 2005, claimed that providing clean water and schools was more important (Smith, 2005).

Even though ambitious and well-intentioned, the OLPC project was unfavourably compared by some educators with more cost-effective measures such as the provision of classrooms, teachers, libraries and books.

For example, John Wood, founder of *Room to Read*, a NPO that provides libraries and books, pointed out that a $2,000 library could serve 400 children, costing just $5 a child to bring access to a wide range of books in the local languages. Also, a $10,000 school could serve 400–500 children ($20–$25 a child). According to Wood, these were more appropriate solutions for education in remote areas than a two hundred dollar computer (Web.archive.org, 2016).

The OLPC project finally collapsed in 2014, when the hardware of the computer became out of date, when spare parts were hard to find, and when the OLPC organization was no longer able to provide support (Wayan, 2016).

In the analysis that followed, The OLPC organization estimated that it would have needed $30 billion annually to reach all the children in the world, at an initial cost of $208 per laptop. But this would have been only a beginning, as school servers, satellite and set-up costs, teams of advisors and further infrastructure would have then been necessary. This cost and infrastructure had also not taken into account the harsh conditions for computers in the developing world, 'power fluctuations, heat, dust, floods, hurricanes, goats and insects' (Camfield, 2006).

Finally, the OLPC project became a cautionary tale involving first world assumptions, a misplaced belief in technology as a 'cure-all' solution to education, and the difficulties and enormous costs involved in bridging the gap between rich and poor.

The question of technology itself, and the assumption that it is a panacea for education, has also been the subject of a number of influential studies. A meta-analysis of these studies (Trucano, 2011) concluded that there are no technology shortcuts to good education (see also Barrera-Osorio, et al., 2009, Behar, 2010, and Toyama, 2010).

VI. Conclusion

The exponential speed of internet uptake in the developed world cannot be simply replicated in the developing world. This is because, as detailed above, there are a number of urgent problems to overcome first – including poverty, health and literacy.

Another problem is the lack of internet infrastructure, and the high cost of internet services in the developing world. According to the 2013 *Affordability Report* by the Alliance for Affordable Internet, in at least 46 countries "the cost of entry-level broadband services exceeds 40 percent of monthly income for people living under $2/day, and in many countries exceeds 80 percent or even 100 percent of monthly income" (Anon., 2013).

There are also many variables to navigate when assessing the global digital divide, because numbers alone do not provide an adequate picture. For example, which characteristics or attributes best describe the digital divide: income, education, age, gender, geographic location, motivation, reason not to use, etc.? Also, how sophisticated is the internet usage being measured? Is connectivity defined by mere access, retrieval, interactivity, intensive and

extensive usage, innovative contributions, etc.? And how does this internet access relate to digital literacy?

An example of the complexity of measuring and monitoring the digital divide is presented by Martin (2011). Martin points out that "counting with only 3 different choices of subjects (individuals, organizations, or countries), each with 4 characteristics (age, wealth, geography, sector), distinguishing between three levels of digital adoption (access, actual usage and effective adoption), and six types of technologies (fixed phone, mobile... Internet...), already results in 3x4x3x6 = 216 different ways to define the digital divide. Each one of them seems equally reasonable and depends on the objective pursued by the analyst".

The other problem to overcome in attempting to connect the rest of the world to the internet by 2020, is that internet growth is currently slowing. For example, the number of global Internet users increased only 8% in 2014, compared to 10% in 2013 and 11% in 2010 (Baig, 2016).

The goal of universal internet connectivity is a noble cause. However, it is perhaps naïve and optimistic to believe that this can be accomplished by 2020.

As the analysis presented above reveals, this goal is impractical, if not impossible, without major and sustained social, economic, health, educational and policy changes, and the political will to implement and sustain these.

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