



Impact of Digital Technologies on Human and Planetary Health

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Abstract

21st century generic digital technologies have totally transformed our understanding of the dynamics of many of the serious and complex global health and environmental challenges faced by the human race today.

This paper reflects on the opportunities and challenges to human and planetary health created by the democratisation of digital technologies.

Keywords: Digital Technologies; Digital Earth; International Society for Digital Medicine (ISDM)

Introduction and Background

Digital Earth is a concept for understanding and visualising our planet's environmental ecosystem. It was an initiative of USA Vice President Al Gore in 1998. It takes the form of a virtual representation of the Earth that is georeferenced and connected to the world's digital knowledge archives [1].

"The Digital Earth initiative fits within many global organizations' missions through sharing knowledge and ideas about Digital Earth and seeking global benefits using Digital Earth technology" [2].

The International Society for Digital Medicine (ISDM) was launched at an international conference in Nanjing, China in 2016. The statute of ISDM states its objectives as follows:-

"The objectives of the Society shall be to join together groups and individuals in an international organization in order to establish a platform for academic exchange and collaboration in digital

medicine among scientists from different countries who are devoted to digital medicine research and its application to improve diagnosis and treatment, thus promoting the development of medicine" [3].

The challenge of complex systems

The health of the human body is a complex ecosystem affected by a multiplicity of internal and external factors. Every citizen has their own unique genetic profile, location and personal circumstances that all go to determine health and physical and mental well-being and, as a consequence, their need for/demand on public health services. Advances in digital technologies that can measure, monitor and analyse health key performance indicators help us to diagnose health problems more quickly and accurately. They also aggregate data to help formulate health policies and strategies.

The complex ecosystem of planet earth also generates key performance indicators such as ocean temperatures, carbon dioxide emissions, levels of pollution, sea levels etc, all of which we can now

not only measure and monitor with great accuracy. We can now also visualise and share this data with a global audience to assist with education and collaboration.

Both the human health and earth environmental ecosystems are so complex and so dependent on human behaviour that it is extraordinarily difficult to devise and implement strategies at a global level that are effective and practical at a local/individual level.

Impact of digital democratisation

Consumer digital technologies have served to democratise communications and make them accessible to citizens all over the world, not only with the power to access information 24/7 but also to publish and disseminate information to global audiences at lightning speed. It is this exponential growth in the volume and speed of information transfer that can either assist humans to respond to health and environmental challenges or create instability and unpredictability in outcomes.

In engineering terms, communications technologies have spawned a fast response complex system with inadequate feedback control. A suitable analogy might be a large cruise ship vulnerable to all passengers simultaneously moving to one side when a single passenger is given the ability to tell everyone on board to do so.

Digital technologies, power and responsibility

Whilst digital technologies have undoubtedly empowered both environmental and health professionals, they have also contributed to a deterioration in both human and planetary health. They have enabled massive growth in trade and consumption of natural resources. On the positive side, these developments have seen improvements in standard of living, greater longevity and greater mobility. Conversely, they have led to global warming, pollution and a serious rise in lifestyle-related conditions such as obesity, diabetes and cardiovascular problems plus an increased risk of global pandemics.

“Digital technologies have created the most connected society in human history yet, paradoxically, its is arguably the most disconnected”.

The democratisation of digital communications has empowered individual citizens to impact the lives of millions of other citizens

without any associated responsibility for the consequences. Conversely, it can be argued that those charged with responsibility for the future health and environmental safety of millions of citizens do not have the necessary power to achieve their goals, especially when the goals are dependent on human behaviour.

It is this disconnect between power and responsibility that is one of the most serious barriers to solving issues of both human health and planetary health.

The impact of COVID-19 and community development

The coronavirus pandemic is a terrible bookmark in the history of human development. However, COVID-19 may have given the human race an opportunity to reflect on its future and to learn new and better ways to live.

One of the global impacts of the pandemic was the shift towards working from home and the increased use of web technologies to communicate and collaborate. Not only did this have an immediate impact on carbon emissions from travel, it also helped to revive local community development. People all over the globe began to take more responsibility for their own lives and the lives of their neighbours, rebuilding community connections that have slowly been eroded over time.

Although the pandemic is not over, there are signs that global society is becoming resigned to living with the pandemic with growing pressures to resume life before COVID-19 with all the potential dangers to human and planetary health this implies.

Conclusions

The future of humanity hangs in the balance. Our ability to tackle human and planetary health issues will depend on our collective ability to change our behaviours and develop societal strategies that are equitable and effective.

We need to address the balance between freedom and responsibility. Digital technologies can provide us with the tools to monitor and visualise human and planetary health and simulations that can educate and alert us.

Changes in human behaviour are critical to our future and we need to find ways to rebuild the severed connections between

power and responsibility for our own lives and those of our global neighbours.

The use of games psychology and mechanics linked to our individual human and environmental health parameters could provide policy makers and strategists with tools to influence behaviour at scale but these are complex systems.

Human health and planetary health are both inter-dependent living ecosystems which respond to internal and external influences. If humans cannot find an answer to a sustainable future, we may find the answer imposed on us by our own health and environmental ecosystems.

Bibliography

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