

Chapter 9

Impact of Disruptive Technologies on the Socioeconomic Development of Emerging Countries: Digital Tech and Resources for Learning Under Lockdown

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ABSTRACT

In the COVID-19 pandemic crisis, educational institutions had to be temporarily shut down by their respective governments around the world in order to contain the spread of the virus. The pandemic globally engendered new ways of teaching and learning amidst the restrictions. Schools in emerging countries are mostly dependent on the traditional face-to-face method of teaching and learning and barely had any substantial experience in virtual education prior to the outbreak. Moreover, many countries lack adequate infrastructure for ICTs and internet usage. Nonetheless, these countries also adopted various digital technologies for virtual teaching and learning. This chapter discusses digital technologies and resources for learning in emerging countries under lockdown and proposes a research model for evaluating their impact amidst the effects of the digital divide.

INTRODUCTION

During the outbreak of the COVID-19 pandemic, many preventive measures which were non-medicinal were recommended. These included self-isolation, social distancing and a high level of personal hygiene paramount of which is frequent hand washing. In addition to these measures, educational institutions had to be temporarily shut down by their respective governments all around the world in order to con-

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tain the spread of the virus (Bayham & Fenichel, 2020; Remuzzi & Remuzzi, 2020; Viner et al., 2020). This happens to be not the first time that schools had to be closed amidst a pandemic. The 1918 to 1919 Spanish flu, the 1958 Asian flu, the Hong Kong originated pandemic flu in 1968, the outbreak of Swine flu in USA and Mexico in 2009, and the 2014 Ebola disease, all resulted in school closures in affected parts of the world. During the spread of infectious diseases, restriction of movements and for that matter closure of schools have been found to be an effective way to slow down the spread of the disease (Oloyede et al., 2022).

It is very likely for developing countries to suffer the impact of the pandemic the more with regards to disruption of educational processes (Mathrani et al., 2021). This is from the fact that from elementary to tertiary levels, most schools in Africa for instance are dependent on the traditional face-to-face method of teaching and barely have any substantial experience in virtual teaching prior to the outbreak of the pandemic.

Nevertheless, to protect students' health against the disease without compromising the educational process, reinforcement of infection control measures needs to be complemented with distance learning in the form of online learning to avoid crowding which fuels the spread of the virus. As a result, many schools in developing countries have also adopted various digital technologies used for virtual teaching and learning. In emerging countries, the efficacy of virtual teaching and learning can be influenced by a myriad of factors prominent of which is the digital divide (Mathrani et al., 2021) in addition to the socio-economic condition of the country and its people (Noor et al., 2022), skillsets and motivation of both teachers and learners, (Mehta et al., 2016; Towers et al., 2019) and many others.

Most developing countries were ranked the least in the 2017 edition of the ITU-IDI Telecommunication Infrastructure & Access Index (ITU, 2017). This is an indication of how disadvantaged such countries are regarding the digital divide. Though the digital divide negatively impacts emerging economies the most, majority of studies on the phenomenon are conducted in the developed world. The few digital divide studies with developing country contexts also suffer the limitation where the only key variable used to measure the phenomenon is access to ICT infrastructure (Bertot et al., 2011). Rahman (2015) therefore posits that using technological determinism to explain the digital divide is inadequate. It is therefore suggested that different dimensions be used to examine the digital divide rather than just the categorization into the "haves" and the "have-nots". Moreover, extant literature on teaching and learning technologies in the Covid-19 pandemic lack a focus on how multidimensional digital divide affects the use and impact of such technologies. This chapter fills these gaps by proposing a conceptual model for evaluating the use of digital technologies and resources for learning under lockdown in emerging countries. The next section provides an overview of the most common of such technologies and resources.

Overview of Digital Technologies for Online Teaching and Learning

Improvement in telecommunication networks over the years has given way to the successful development of web conferencing applications and solutions for business communications. Web conferencing is a multimedia communications system in which computer screens, individual applications or web contents can be shared among connected computers in real-time. Web conferencing can be used to support teamwork, organize and conduct seminars or business meetings, deliver lead presentations and provide customer-relation support. These functionalities enable for its use recently for conducting online teaching and learning (education). Some applications for web conferencing offer many other sophisticated features well-suited for real-time interactions between teachers and learners. These include whiteboard-

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