The digital divide: Overcoming barriers to digital learning in post-Covid-19 South Africa

By Alison Massey, issued by EDGE Education

5 Jul 2021

The worldwide progress in digital education has been exciting to watch, with new advances being made seemingly each week. Following the onset of the Covid-19 pandemic, the reliance on digital learning solutions has undoubtedly increased (Dwolatzky and Harris, 2019). This raises the question as to how well South Africa will be able to address the ever-growing need for digital education solutions post-Covid, in the context of an already struggling education system.
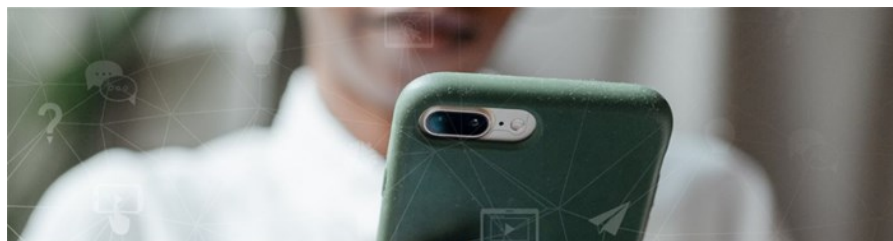
In light of existing limitations regarding digital infrastructure and accessibility, government bodies may need to join forces with eLearning practitioners and other digital stakeholders, to identify solutions to South Africa's barriers to distribution and access to online learning solutions.

SA's information haves and have-nots

The term 'digital divide' has been used extensively in discussing the unequal access to digital resources experienced by different social groups, along with the effects that this gap has on existing socio-economic divides. Singh (2004) describes the concept as 'a situation of information haves and information have-nots'. In other words, while increased access to information through digital platforms can be liberating, this is only true if someone is physically *able* to access those platforms – i.e. via the Internet, mobile phones, computers etc.

For those who lack access, such digital solutions serve as another form of exclusion from the global information society, while those who *do* have access can progress unencumbered. As Singh (2004) points out, historically poor educational infrastructure, resources and training have contributed significantly to the digital divide in South Africa. As a result, the country's education system could benefit most from broadened access to the Internet and digital learning solutions.

Digital education in SA: Ongoing challenges

Education is the area in which the digital divide is most pronounced, with a wide variety of challenges. The following are a few of the most significant barriers to digital education in South Africa (*Mail & Guardian*, 2018; Hanekom, 2020; Jantjies, 2020; and Goldswain, 2020):

- Limited access to the Internet, especially in rural communities (only 37% of households across South Africa can access the Internet reliably using cell phones or computers)
- High data prices
- A lack of adequate bandwidth and storage (in terms of cloud computing)
- Limited access to devices (e.g. laptops, computers or tablets) and inadequate infrastructure required for using these devices (e.g. reliable electricity)
- Limited access to the necessary software programs
- A lack of training in digital literacy for both learners and parents (e.g. learners who have not used the Internet or digital tools before)
- Inadequate reading and writing literacy, which affects learners' abilities to use online resources
- A growing need for teacher support and training
- Outdated government guidelines for eLearning and provincial use of digital resources

The obstacles of digital access and literacy are also greatly affected by the socio-economic environments in which learners find themselves – especially considering the significant differences between public and private schools. With an already unequal education system, South African schools have not been affected by the pandemic uniformly (*Bizcommunity.com*, 2020). There is a marked difference between public and private schools – as well as rural and urban schools – in terms of the distribution of technological resources, which has become more pronounced as virtual learning has become more commonplace (*Bizcommunity.com*, 2020).

With public schools' pressing need for digital resources, it is important now more than ever before that government initiates a mass roll-out of Internet access (*Mail & Guardian,* 2018). It is challenging for EdTech companies to make a difference when the use of their learning platforms is blocked by learners' inadequate access to high-speed Internet. It is also crucial for government to invest in improving basic infrastructure at rural and historically disadvantaged schools; for example, by providing consistent forms of electricity to facilitate the provision of Internet and computers or tablets (Cele, 2020).

Another factor to consider is that of language. While South Africa has 11 official languages, the educational resources that are available online are predominantly in English (Hanekom, 2020; and Jantjies and Joy, 2013: 1). There is limited educational content available in African languages, which is particularly problematic for those whose native tongue is not English (Jantjies and Joy, 2013: 1; and Martindale, 2002). For first-time Internet users who

particularly problematic for those whose native tongue is not English (Jantjies and Joy, 2013: 1, and Martindale, 2002). For first-time Internet users who aim to develop their digital literacy, navigating an online platform that does not cater to their home language makes online learning even more challenging.

Toward a future of accessible digital education

Despite these glaring issues, it is clear that digital learning is likely to continue to be implemented widely. In fact, globally, digital learning was already becoming a more prominent mode of education before the pandemic hit; it has merely been accelerated by the onset of Covid-19 (Griffiths, 2020). Presently, the digital learning industry is experiencing a growth of '19% or more per year', and it is expected to exceed a value of $243bn by 2022 (Tamm, 2021). It is therefore evident that there is no escaping South Africa's need to adapt to learning digitally.

While South Africa's digital milieu may seem discouraging in terms of education and its restricted resources, there are ways for key issues to be addressed, and solutions need to be crafted collaboratively by various stakeholders. Government, digital service providers and the education sector need to cooperate to identify solutions that work for individual contexts. Moreover, EdTech companies can collaborate on solutions such as increased access to mobile learning, sponsoring the provision of hardware, and providing open access to online educational resources and digital literacy training, among other potential learning programmes.

Mobile learning

While many South African learners lack access to computers, it is worth noting that many of them do own, or have access to, mobile phones. A 2014 study yielded the following results among South African learners (*SovTech*, 2015):

- 22% had access to computers
- 48% owned a cell phone
- 100% had access to a cell phone

The potential for mobile learning in South Africa is highlighted in a 2013 study by Mmaki Jantjies and Mike Joy. In conducting this study, the researchers asked learners to use their cell phones to create learning materials in their preferred languages. The learners used a mobile-accessible online system to store and access this material, thereby enabling them to revise it later (Jantjies and Joy, 2013: 2). Mobile phones therefore possess great potential in terms of remote learning in South Africa – particularly if Internet service providers collaborate with stakeholders to provide affordable data options.

However, if our education system is to adopt mobile learning platforms more widely, EdTech companies need to adopt a mobile-first design approach to their products. Online products or resources with a mobile-first design are able to adapt to the 'viewable area', to accommodate devices with smaller screens, such as cell phones and tablets (Pandey, 2018). If EdTech companies create products using effective mobile-first designs and collaborate with cell phone service providers to increase learners' access to data, issues relating to access to Internet, learning resources and devices could be resolved. Schools can also consider other creative ways to use cell phones in facilitating learning. For example, a non-governmental organisation in the Eastern Cape sends learning materials, voice notes, videos etc. via WhatsApp in order to reach more learners online (Davis, 2020).

Hardware

Although mobile phones do present a possible solution to limitations in the distribution and access of digital learning materials, learners should ideally have access to more powerful devices with greater storage potential, among other features. As learners progress through school, their needs relating to devices become more nuanced, as they are required to perform more complex tasks. For example, laptops are more powerful than tablets, which means that they are able to run more demanding programs – this is particularly relevant to learners studying subjects such as information technology (IT) (Lynch, 2017).

In this case, it is possible for larger technology companies to collaborate with government and other private stakeholders to provide schools with access to computers and other hardware – either through donations, or by contributing to the creation of computer learning centres (*Edex Live*, 2020; and Sello, 2019).

For example, the Good Work Foundation has been working to create 'digital learning campuses' in Mpumalanga, where learners receive lessons in various school subjects, including digital literacy (Sello, 2019). The lessons are taught on physical campuses established in various areas of Mpumalanga – this has become a limitation due to our current need for remote learning during the pandemic. However, this type of programme is an important step toward resolving issues around access to physical digital resources and the Internet in general, and it will remain important as the pandemic eases.

Another innovative solution is the creation of Wi-Fi hotspots or learning centres in rural schools, which enable learners to access digital libraries (Delport, 2020). EdTech companies and tertiary institutions can facilitate programmes such as these by providing free access to their own digital libraries, while Internet service providers can establish free hotspots.

Physical libraries also play an important role in providing the population with access to digital resources. For example, many libraries have communal computers with an Internet connection that can be used by the public (*Kajeet,* 2020). In many countries, libraries also have the facilities and resources to support digital literacy through educational programmes and technology training, which is important if we are to move toward an era of increased remote learning using digital tools. An important activity that aids libraries in this process is the mass digitisation of learning material that existed previously in print form only (*Kajeet,* 2020). However, in South Africa, many libraries still lack the physical technology and data services required to access up-to-date digital resources (*The Journalist*, 2019).

Open access to online educational resources

Perhaps the most important resource that EdTech companies can provide is open access to online educational content. An open textbook, for example, is one that is 'licensed under open copyright', meaning that it is free to access online (*LibGuides at University of Saint Mary*, n.d.). Open textbooks can also be facilitated by collaborations between digital learning platforms and learning centres or libraries. For example, over the past decade, Google has undertaken an initiative in Russia to provide learning materials to underprivileged schools, by providing two national libraries with open access to certain textbooks on its Google Books platform (Usova, 2009: 246).

Once underprivileged learners have access to the Internet, they need affordable ways to access information that is specific to their needs. Companies can achieve this by working toward getting their online platforms *zero-rated*. In this way, platforms (e.g. online databases or Internet service providers) can provide users with the option to 'access certain content without being charged for the corresponding data consumption' (Krämer and Peitz, 2018). This access is usually provided under specific circumstances, such as the zero-rate applying only to specific websites or being subsidised with advertisements.

For example, in response to the pandemic, Telkom has zero-rated 'all academic websites – anything within the ac.za domain' (Dell, 2020). This helps students to access learning materials, textbooks and other digital resources provided on university websites (Dell, 2020). In addition to this, EdTech companies could join forces with service providers such as Telkom to provide students with data and to zero-rate their websites. However, for this approach to have any longevity, it likely needs to be implemented with the help of government subsidies.

Digital literacy training

In order for any of the solutions mentioned here to work, digital literacy training needs to become more widespread across South Africa. Digital literacy comprises 'a set of basic skills required for working with digital media, information processing and retrieval' (Chetty et al., 2018: 6). Such skills enable an individual to use digital resources (both hardware and software), and to do so effectively.

In this sense, digital literacy training is 'learning that enables learning'. In other words, students learn how to use digital resources in order to learn online effectively. It is therefore important that teachers are upskilled, too, so that they are better able to teach learners the necessary digital skills.

One example of a creative approach to digital literacy training is Project B3, an American non-profit organisation that appoints learners as 'digital responsibility mentors' at schools across the country, and then gets them to assist in curriculum development (Brown, 2019). EdTech companies can also prepare learners and teachers for the digital education landscape by providing educational guides and courses – especially if this is done for free or at a discounted rate, or in combination with a zero-rating system. For example, EDGE's Digital CourseBook, *Developing Academic Literacies for Higher Education,* includes a chapter on digital literacy that can help first-year university or college students to adapt to online learning environments.

Conclusion

Despite the fact that there are multiple barriers to online education in South Africa, there is much that can be done to improve the situation. However, solutions need to be not only swift, but also multipronged and adaptable. Since EdTech encompasses various digital fields and resources, it is an industry that is positioned to drive solutions to the digital divide. This can be achieved by companies placing greater emphasis on social upliftment programmes and not-for-profit schemes, such as zero-rating websites; providing affordable resources to schools at a discounted or free rate; creating non-profit digital learning centres; and providing accessible digital literacy guides/programmes that are priced on a sliding scale. Most importantly, in the context of an uncertain future for education, such solutions must be approached collaboratively. Therefore, EdTech companies are likely to be positioned as key role players in overcoming the digital divide through cooperation with various stakeholders.

Bibliography

Bizcommunity.com [website] (2020), 'COVID-19 exposes deepening divide between public and private schools'. <https://www.bizcommunity.com/Article/196/498/207712.html> accessed 11 November 2020.

Brown, J. (2019), 'Digital Literacy Programs Prepare Students for a Tech-Enabled Future'. *EdTech* [website] <https://edtechmagazine.com/k12/article/2019/04/digital-literacy-programs-prepare-students-tech-enabled-future> accessed 12 November 2020.

Cele, A. (2020), 'The global pandemic could become an opportunity to build an equitable, inclusive education system'. *Daily Maverick* [website] <https://www.dailymaverick.co.za/article/2020-10-27-the-global-pandemic-could-become-an-opportunity-to-build-an-equitable-inclusive-education-system/> accessed 11 November 2020.

Chetty, K., Qigui, L., Gcora, N., Josie, J., Wenwei, L. and Fang, C. (2018), 'Bridging the digital divide: measuring digital literacy'. *The Open-Access, Open-Assessment E-Journal* 12(23): 1–20.

Davis, R. (2020), 'Can WhatsApp save the SA schooling system?' *Daily Maverick* [website] <https://www.dailymaverick.co.za/article/2020-09-26-can-whatsapp-save-the-sa-schooling-system/> accessed 11 November 2020.

Dell, S. (2020), 'Zero-rating online learning – Not as simple as it sounds'. *University World News* [website] <https://www.universityworldnews.com/post.php?story=20200408201225155> accessed 12 November 2020.

Delport, J. (2020), 'South African EduTech Supports Online Learning for Students in Rural Communities'. *IT News Africa* [website] <https://www.itnewsafrica.com/2020/05/south-african-edutech-supports-online-learning-for-students-in-rural-communities/> accessed 10 October 2020.

Dwolatzky, B. and Harris, M. (2019), 'SA Education: A national reset is needed and mass internet access is the only way forward'. *Daily Maverick* [website] <https://www-dailymaverick-co-za.cdn.ampproject.org/c/s/www.dailymaverick.co.za/article/2020-07-02-sa-education-a-national-reset-is-needed-and-mass-internet-access-is-the-only-way-forward/amp/> accessed 11 October 2020.

Edex Live [website] (2020), 'IBM and National Skill Development Corporation collaborate to give free digital education'. <https://www.edexlive.com/news/2020/aug/21/ibm-and-national-skill-development-corporation-collaborate-to-give-free-digital-education-14035.html> accessed 8 October 2020.

Goldswain, Z. (2020), 'Digital divide more acute in access to education'. *Witbank News* [website] <https://witbanknews.co.za/163097/digital-divide-more-acute-in-access-to-education/> accessed 8 October 2020.

Griffiths, J. (2020), 'Universities must adapt or wither away – online learning is here to stay'. *Daily Maverick* [website] <https://www.dailymaverick.co.za/opinionista/2020-08-27-universities-must-adapt-or-wither-away-online-learning-is-here-to-stay/> accessed 11 October 2020.

Hanekom, P. (2020), 'COVID-19 exposes South Africa's digital literacy divide'. *Mail & Guardian* [website] <https://mg.co.za/opinion/2020-09-08-COVID-19-exposes-south-africas-digital-literacy-divide/> accessed 8 October 2020.

Jantjies, M. (2020), 'How South Africa can address digital inequalities in e-learning'. *The Conversation* [website] <https://theconversation.com/how-south-africa-can-address-digital-inequalities-in-e-learning-137086> accessed 10 October 2020.

Jantjies, M. and Joy, M. (2013), 'Mobile learning through indigenous languages: learning through a constructivist approach'. *12th World Conference on Mobile and Contextual Learning*. Doha, Qatar: College of the North Atlantic-Qatar. Conference paper, pp. 1–8.

Kajeet [website] (2020), 'How Public Libraries Can Support Students Amid Distance Learning'. <https://www.kajeet.net/how-public-libraries-can-support-students-amid-distance-learning/> accessed 12 November 2020.

Krämer, J. and Peitz, M. (2018), *A Fresh Look at Zero-Rating: Final Report*. Brussels: Centre on Regulation in Europe.

LibGuides at University of Saint Mary [website] 'Faculty Resources: Open Access Textbooks'. <https://stmary.libguides.com/facultyresources/openaccesstextbooks#:~:text=An%20open%20textbook%20is%20a,or%20faculty%20opt%20for%20these.> accessed 12 November 2020.

Lynch, M. (2017), 'How to Choose the Right Digital Learning Device'. *The Edvocate* [website] <https://www.theedadvocate.org/choose-right-digital-learning-device/> accessed 11 November 2020.

Mail & Guardian [website] (2018), 'Edtech needs to bridge the divide'. <https://mg.co.za/article/2018-06-15-00-edtech-needs-to-bridge-the-divide/> accessed 9 October 2020.

Martindale, L. (2002), 'Bridging the Digital Divide in South Africa'. *Linux Journal* [website] <https://www.linuxjournal.com/article/5966> accessed 11 November 2020.

McKane, J. (2020), 'Here is the full list of zero-rated websites in South Africa'. *The Conversation* [website] <https://mybroadband.co.za/news/internet/356371-here-is-the-full-list-of-zero-rated-websites-in-south-africa.html> accessed 11 October 2020.

Pandey, A. (2018), 'Mobile First Designs In eLearning: A Mobile Learning Case Study'. *eLearning Industry* [website] <https://elearningindustry.com/mobile-first-designs-in-elearning-mobile-learning-case-study> accessed 11 November 2020.

Sello, L. (2019), 'Digital education creating opportunities in rural SA'. *Investec* [website] <https://www.investec.com/en_za/focus/tech4good/digital-education-creating-opportunities-in-rural-sa.html> accessed 8 October 2020.

Singh, A. M. (2004), 'Bridging the digital divide: the role of universities in getting South Africa closer to the global information society'. *South African Journal of Information Management* 6(2).

SovTech [website] (2015), 'Mobile Rich & Education Poor – Is m-Learning A Solution For Education In Africa?' <https://www.sovtech.co.za/mobile-rich-education-poor-is-m-learning-a-solution-for-education-in-africa/> accessed 11 October 2020.

Tamm, S. (2021), '100 Essential E-Learning Statistics for 2020'. *e-student.org* [website] <https://e-student.org/e-learning-statistics/> accessed 17 May 2020.

The Journalist [website] (2019), 'Too many libraries are forced to close their doors'. <http://www.thejournalist.org.za/books/too-many-libraries-are-forced-to-close-their-doors/> accessed 16 March 2021.
Usova, T. V. (2009), 'Open Access and the Digital Divide: An Overview in CIS Libraries'. *Feliciter* 6: 246–2

EDGE Education

EDGE Education creates engaging learning experiences that empower both students and educators. Because we understand 21st-century teaching and learning, we create holistic academic EdTech solutions that are meaningful and fit for purpose.

Profile | News | Contact | RSS Feed

For more, visit: https://www.bizcommunity.com