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Fake news about COVID-19: The impact on high school learners in southern Africa

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Date: October 2020

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Support for this project was provided by the Open Society Foundations. For more information about Open Society please go to: www.opensocietyfoundations.org

Contents

1 Introduction

"Is it true you can catch it from washing your hands too much?" asked several schoolchildren about the novel coronavirus. This was to journalists joining classes via videoconferencing to discuss constructing and evaluating knowledge (Von Reppert-Bismarck & Schleicher, 2020). The question was one among many others, all based on fake news. Fake news can be broadly categorised into *disinformation* of false information deliberately distributed with an intent to deceive, and *misinformation* that is inaccurate, outdated or incomplete information disseminated without any intention of harming or misleading its recipients (Von Reppert-Bismarck & Schleicher, 2020).

The question asked by the schoolchildren graphically illustrates the danger of fake news during the COVID-19 pandemic: it can undermine critical public health measures to combat the spread of the novel coronavirus, keep people safe from infection and save lives.

While the internet has become an invaluable resource in our daily lives that can bring about positive change through awareness and education, "it can also have devastating effects that can lead to human casualties" through the spread of fake news (Retief, 2020). The United Nations Educational, Scientific and Cultural Organization (UNESCO) has warned that "We live in a COVID-19 world vulnerable to fabricated news" (Gooch, 2020) where conspiracy theories about the origins of the virus, false remedies and misleading healthcare information have confused an anxious public and sown distrust.

With "infodemic" flooding our lives daily through multiple sources, learners' ability to separate fact and fiction has become more critical than ever before. However, in the 2018 Programme for International Student Assessment, fewer than one in ten 15-year-olds across the industrialised world were able to distinguish between fact and opinion when the cues were implicit (Von Reppert-Bismark & Schleicher, 2020).

The COVID-19 pandemic has resulted in the closure of schools across the world with governments having to implement remote learning, mainly through online means. In southern Africa mobile internet access of households is relatively high (International Telecommunications Union [ITU], 2018). However, the high cost of data and unreliable internet connectivity means that most schoolchildren in poor and remote communities cannot engage in online learning with the large amount of data that is required (Parker et al., 2020). Nonetheless, even these learners are likely to be able to obtain mobile internet access for some time a day, and those who can learn online will be connected to the internet for many hours. From social media and other online platforms, together with radio and television access, the learners are likely to be exposed to a deluge of information, accurate and false (ITU, 2018). Teachers stand between pupils and fake news, so without a teacher who could potentially mediate and correct the false information they may bring to class, learners will be more vulnerable to its impact, particularly if they lack the critical skills required to distinguish between what is true and what is not (Walker, 2020; Wineburg et al., 2016).

The World Health Organization (WHO) has warned that the overload and spread of misleading information during the pandemic causes fear and anxiety (2020b). Moreover, when learners are exposed to overwhelming amounts of fake news on social media, it can deeply influence their opinion on a certain subject. They can also unthinkingly share the false information, providing fertile ground for it to spread (Guess et al., 2019; Rampersad & Althiyabi, 2020).

The very real danger of fake news during COVID-19 motivated two teams of researchers in southern Africa (during the Researchers' Bootcamp project in South Africa and the Researcher Challenge project in the South African Development Community [SADC] launched by JET Education Services [JET]), to investigate this phenomenon). The two research teams explored how the closure of schools during the pandemic may have affected high school learners exposed to fake news and what could be done to combat it.[1]

1 JET, the UNESCO Regional Office for Southern Africa (ROSA) and partners from the Global Challenge Research Fund's Transforming Education for Sustainable Futures Project (South African node), as well as the Open Society Foundations (OSF) are contributing to the generation of evidence of how education and training systems in the Southern African Development Community (SADC) are affected by – and can respond to – COVID-19.

The first research report on fake news in South Africa during COVID-19 was produced by a team led by Tshepo Motsepe, and the second report was the result of research in three SADC countries, Eswatini, Malawi and Zimbabwe, undertaken by Brendah Siamanjime Chuma and her team.[2]

Because the research of the two teams was undertaken in early April and early June 2020, much has happened since then, in terms of school closures, remote learning, the world's growing understanding of the novel coronavirus, and the impact of fake news as an increasingly dangerous and ubiquitous problem. Research reports, journal papers and media articles and appear almost daily about it. Consequently, this paper will also update and add to what the research of the two teams discovered.

2 Context

Some five months have passed since the WHO announced COVID-19 outbreak as a pandemic on 11 March 2020 (2020a), and every aspect of life has been affected.

As COVID-19 has spread across the world, countries have implemented lockdowns and closed schools to halt the spread of the virus. Globally, some one billion children, who typically head to class on any given day, have had to stay home, and schooling has become remote learning.

In developed countries with well-established school systems, the implementation of remote learning has been a challenge, but even more so in developing countries where the most disadvantaged learners in poor communities, informal settlements and remote areas have been unable to access reliable, affordable internet connectivity – at the expense of their learning.

In the SADC region, as cases of COVID-19 were confirmed, most schools were closed during March, and remote learning began. The SADC research team used survey research to explore how fake news was affecting high schoolers in Eswatini, Malawi and Zimbabwe. Schools have remained closed in these countries with the hope that they would be able to reopen in July. However, in most cases the reopening has had to be postponed, with only a few grades allowed to return when schools have all the personal protective equipment and safety precautions in place. According to the most recent figures, Eswatini has some 350 000 primary and secondary pupils (UNESCO, 2020b); Malawi about 4.5 million (UNESCO, 2020a); and Zimbabwe some 3.1 million (Wikipedia, 2020b).

South African schools, with some 13 million learners (Statistics South Africa [StatsSA], 2019a.), were closed from Wednesday 18 March 2020 and started reopening from 1 June 2020. Schools were again closed from 27 July to 24 August 2020 with some grades returning before then.

Remote learning is typically linked to emergency situations that pose a threat to student safety. A key point made by Ray (2020) is that in remote learning environments brought about by an emergency, "the learner and teacher are not accustomed to having distance during instruction", and so the transition to remote learning is challenging for both teachers and learners. Ray (2020) also points out that remote learning can encompass many modes of delivery, including online learning, radio and television programmes, and printed materials.

In South Africa, when schools closed, the Department of Basic Education (DBE) turned to online learning supplemented by print, radio and television programmes as a means of remote learning for learners at home. This has been less than effective because the South African education system is hugely unequal. In fact, South Africa has "two education systems" (Spaull, 2019). One system comprises 75% of the public schooling system, which is populated by poor, predominantly black learners and characterised by overcrowding, inadequate resources, limited or no internet connectivity, high dropout rates and underperformance. The remaining 25% comprise schools that are adequately resourced and supported (including for technology-mediated remote learning) and deliver a high quality of education (Vally, 2019). Moreover, the educational inequality reflects the huge societal inequality in South Africa. Although it is the most diversified and industrialised economy in Africa, it is also one of the most unequal countries in the world with severe socio-economic challenges: low economic growth, very high rates of poverty, social inequality, unemployment, corruption, disparities in access to public services – problems that disproportionately affect black South Africans.

[2] The South African research report can be accessed on the JET website: https://www.jet.org.za/resources/theme-6-research-report- final-1.pdf/download .

Even though South Africa has the most advanced information and communications technology networks in sub-Saharan Africa, technology and data-related constraints in South Africa are considerable. According to the 2018 General Household Survey, only around 10.4% of South African households have access to the internet at home, and in rural Limpopo, for example, this is as low as 1.7% (StatsSA, 2019b:58). Mobile internet access is higher with 60.1% nationally and 43.3% in Limpopo (StatsSA, 2019b:58). This means that most families rely on their mobile phones to access the internet. However, the high cost of data and unreliable connectivity make internet accessibility unaffordable for many. Radio has a higher penetration than television, newspapers and the internet, "reaching over 88% of people in rural and urban centres aged 15 years and older in a typical week in South Africa" (Stuart & Chotia, 2016:111).

Given the high cost of data and unreliable internet connectivity, most school children in South Africa in poor and remote communities cannot engage in online learning, and consequently, their learning has suffered hugely. Indeed, in a national briefing on 30 April 2020 the Minister of Basic Education acknowledged that during the lockdown, "very few learners are reached, and even those who are reached, schools tell us the impact is less than 20% of what would have happened in the classroom"(Govender, 2020).

In the cases of Eswatini, Malawi and Zimbabwe, television and radio programmes have been used with little or no online learning, given limited internet accessibility, except through mobile phones. Eswatini, with the help of the Global Partnership for Education and the United Nations Children's Fund (UNICEF), is using alternative learning methods through television, radio and newspapers that have been developed to facilitate remote learning (Daries & Valenzuela, 2020). Zimbabwe is employing radio lessons and printed materials. In addition, two small-scale projects using mobile and digital platforms to deliver remote learning have been launched (United Nations Office for the Co-ordination of Humanitarian Affairs, 2020).[3] In Malawian schools there is a shortage of textbooks, and so pupils cannot take them home. UNICEF is working with the government to support schools with materials for distance learning, as well as the production of educational radio programmes (Thembo, 2020).

In Eswatini there is a relatively well-developed fibre optic backbone network, but as the country is landlocked, it depends on neighbouring countries for international fibre bandwidth, which has led to high prices. A 2018 report by the International Telecommunication Union (ITU) indicates that GSM–2G (Global System for Mobile Communications – second-generation cellular network) coverage is high with household mobile phone penetration at 96% (98% in urban areas and 94% in rural ones), the second highest in Sub-Saharan Africa.[4] MTN launched 3G in 2011 and LTE (Long-Term Evolution) was launched in 2016 using the 1 800 MHz band (ITU, 2018: 58).

In the past ten years in Malawi, although "mobile coverage has reached over 80 per cent of the country, ...access is relatively low with just under half (45 per cent) of households having mobile phones in 2015. There is a wide gap between urban (85%) and rural (42 per cent) homes in household mobile telephone penetration" (ITU, 2018: 106).

Zimbabwe has long had a competitive mobile market resulting in a relatively high level of access. In 2014, "89 per cent of homes had mobile phones, including 97 per cent of urban ones and 84 per cent in rural areas. Mobile broadband coverage has been growing, following the launch of 3G by all mobile operators" (ITU, 2018: 200).

The forms of internet connectivity by learners in the four countries are important contextual factors in understanding learners' exposure to fake news, which can spread through many media, including print, radio and television, but most rapidly through the internet and particularly social media. As the information above shows, the use of mobile phones is the most common form of internet access in all four countries.

Thus, high-schoolers' primary access to the internet is through mobile phones, and their use of social media is a key factor in their exposure to fake news. However, as we have seen above, access to the internet via mobile phones is uneven in the four countries, given the generally high cost of data and the urban-rural divide, which favours those learners in better-resourced, urban households.

As there is a dearth of research on fake news in southern Africa, the aim of the two research studies was to investigate the impact of fake news on high school learners in the wake of COVID-19, and produce insights into

3 The VIAMO Mobile Learning platform was launched in Chipinge covering 20 schools and 45 Schools in Chimanimani districts in total targeting 2,500 learners. In addition, 2,697 learners have so far used IGATE digital platform that provides learning materials (reading and number cards, study guides and story books).

4 The International Telecommunication Union (ITU) is an agency of the United Nations (UN) whose purpose is to coordinate telecommunication operations and services throughout the world. (https://whatis.techtarget.com/definition/International- Telecommunication-Union-ITU)

learners' awareness of fake news; their ability to distinguish fake news from accurate information; how false information had affected them; and the strategies that might be used to counter fake news.

3 Methodology

Both studies on fake news used quantitative surveys as their main methodology, supplemented by literature reviews.

The South African study, *Ameliorating the Impact of Fake News on High School Learners during COVID-19*, (Motsepe et al., 2020) used quantitative, closed-ended surveys (with a mixture of categorical and interval/ratio questions) for data collection in early April 2020. One survey was directed at high school learners and the other survey at parents/caregivers and teachers of learners. The focus of the surveys was on learners' perceived levels of awareness of fake news and the reported impact it had on their anxiety levels, risk-taking and other behaviours. The surveys were distributed on various social media platforms that high school students use and also circulated to contacts within the researchers' networks. Participants accessed the online survey form independently.

Convenience sampling was used. The sample size was small – for reasons that are discussed below. The responses that were received totalled 49 from learners at high schools and 24 from parents and teachers. South African researchers then used descriptive analysis to summarise the data and find patterns.

The SADC Researchers' Challenge project, *True or False? The impact of fake news about COVID-19 on high school learners in southern Africa* , also used a quantitative survey research design. Purposive sampling was used to select 313 high school learners resident in Eswatini, Malawi and Zimbabwe. Data was collected in June 2020. The research team used a simple statistical analysis, employing Chi-square tests to ascertain factors associated with the impact of fake news. Statistical significance was considered at $p<0.05$.

From the insights they gained, the research teams then made recommendations to counteract the spread and impact of fake news on learners.

4 Limitations

There were several limitations to the studies. The sample sizes were small, thus carrying the risk that not enough data was collected to support any inferences. Consequently, the results of the small sample sizes must be treated with caution, because significant results can arise purely due to chance. It must also be noted that both teams of researchers faced significant constraints in obtaining larger sample sizes. They had very limited time to collect and analyse the data, and so sample sizes were small. They also could not undertake additional research to triangulate the results.

The South African researchers used convenience sampling to find subjects that were more readily accessible.

This yielded only small numbers of respondents, which means that the results of the sample are not generalisable to the populations (learners, parents/caregivers and teachers) from which they were drawn.

In the purposive sampling of the SADC research, the subjects selected themselves online in accordance with the study purpose. To analyse the data, the researchers used Chi-square tests. However, Chi-square tests are highly sensitive to sample size, such that a reasonably strong association may not come up as a significant result. Moreover, as the surveys were conducted online, only participants who had access to devices and internet connectivity could answer them, resulting in biased samples that reflect the digital divides in the countries. Another limitation is that most international literature on fake news comes from developed countries, so the findings of the literature may not be relevant to developing countries and particularly the southern African context. Although a few fake news studies have been undertaken in Africa, none of them has looked at the effect of fake news on high school learners during COVID-19. This is the gap that the two research projects sought to address.

5 Literature review

As both the South African and SADC region papers are the basis for this paper, the texts of those papers will be used extensively in this paper. Below is a summary of the findings of literature reviews that the two research teams undertook.

5.1 Understanding fake news

The South African and SADC research teams explored the nature and types of fake news. The broad categorisation of fake news is either deliberate **disinformation** with malicious intent to deceive or unintentional **misinformation** spread with no thought of harming or misleading people. However, Wardle (2016) has further categorised fake news into six different types:

1. Authentic material used in the wrong context.
2. Imposter news sites based on clones of trusted news sites.
3. Fake news sites created to deliberately manipulate and falsify information.
4. Fake information presented in graphics, images, and video designed to be highly shareable and so convincing that their authenticity is not questioned.
5. Manipulated content where images and videos have been deliberately altered.
6. Parody content on social media where social commentary is given on specific issues and companies.

How does disinformation and misinformation spread online? Social media is the main conduit:

> *Social media is computer-based technology that facilitates the sharing of ideas, thoughts, and information through the building of virtual networks and communities. By design, social media is internet-based and gives users quick electronic communication of content (Dollarhide, 2020).*

Examples of social media include Facebook, WhatsApp, Twitter, TikTok, WeChat and Instagram. Social media enable people to share true and fake news. Although many accounts on social media are held by legitimate users, social media can be manipulated by social bots, trolls, cyborgs and clickbait that fill the internet with lies and half-truths:

1. A social bot is a social media account that is controlled by a computer algorithm, created by a real human-being to produce and spread content automatically and interact with human-beings on social media (Chu et al., 2010, cited in Motsepe et al., 2020).
2. Social bots can be designed specifically to disrupt online communities and provoke consumers into an emotional response, with the purpose of causing harm by manipulating and spreading fake news on social media.
3. Trolls are real human users who aim to disrupt online communities and trigger negative emotions in others, such as anger and fear, resulting in doubt, distrust and irrational behaviour (Chu et al., 2010, cited in Motsepe et al., 2020).
4. Cyborg users spread fake news by blending automated activities with human input (Shu et al., 2019). The simple switch between human trolls and online bots provide cyborgs with the ability to spread fake news, as they can easily change accounts to spread false information.
5. Clickbait is a form of false advertisement with sensational, misleading or deceptive headlines that use hyperlink text designed to attract attention and to entice users to follow that link and read, view, or listen to the linked piece of online content (Wikipedia, 2020a).

What motivates people and organisations to disseminate fake news? With the promise of anonymity, some online users choose to create and spread fake news for a variety of reasons: from hatred, spite or jealousy; to sow confusion and fear; for political reasons; to promote an ideology or their personal beliefs; to harm business competitors or government; or to receive income/reward from it.

> *People may also feel powerful knowing that they can influence or manipulate people through the information they create and disseminate and gain pleasure from watching the impact their falsely generated news has upon people and the world (Campbell, 2020).*

Some studies have suggested that the spread of fake news is linked to citizens hoping to recapture a sense of control over their lives. In a recent 2017 study by the University of Kent, researchers found that the belief in

conspiracy theories appears to be driven by the need to understand one's environment, the need to be safe and in control of a situation, and the need to maintain a positive image of one's self and one's social group (Zakaria, 2020).

The press, while informative, have financial motives for releasing news content but are also motivated by the pursuit of truth and justice (Palmer, 2017). News in the information age has changed from focussing on accuracy and detail to short sensationalist content that is quickly produced, often without verification of sources (Rubin, 2019). The fake news items travel much faster because of their emotive, sensationalist content (Hobbs, 2017). In an attention economy, the more clicks these websites get, the more ad revenue they receive. Additionally, many fake news producers are politically motivated, desiring a certain worldview to spread or an increase in support for a political entity (Hobbs, 2017). Fake news is particularly powerful because the information is drawn from confirmation bias when the content of the information aligns with a particular belief system, which means that we might be less likely to question the veracity of the story (Hobbs, 2017).

The dissemination of fake news during the COVID-19 crisis is extremely worrying because control of the pandemic demands that people co-operate with one another. This co-operation requires that the quality of information to which people are exposed is always credible. However, in trying to prevent infection, people tend to rely on any information made accessible to them, which can lead to vulnerability and exposure. Misinformation can cause people to turn to ineffective and potentially harmful remedies, to overreact, or more dangerously, to underreact, thus placing themselves and others at risk (Pennycook et al., 2020).

There are many examples of false information spread during the pandemic, including conspiracy theories about the virus being created as a biological weapon in China, and a claim that coconut oil is an effective cure that can kill the virus (Lerman, 2020). Hydroxychloroquine, a medication primarily used to treat malaria, has also been touted as a cure, notably by President Donald Trump.

5.2 Dissemination of fake news

Craig explains how the very nature of social media enables the spread of fake news:

> *The best explanation for social media is that its [sic] word of mouth on steroids, and people are sharing more than words. They also share ideas, pictures, video, and audio: Content. Then other users share that content – in turn, through personal connections – at an unprecedented rate* (Craig, 2020).

Fake news thrives on social media platforms where high volumes of information are instantly shared without the traditional approaches of vetting, carefully and critically examining content (e.g. editors, publishers, media watchdogs). The onus to verify falls on the individual, thus increasing the spread of misinformation/disinformation (Spratt and Agosto, 2017).

Anthony Gooch, Director of the Organization for Economic Cooperation and Development (OECD) Forum established to fight disinformation, notes that disinformation campaigns are nothing new, but explains why they have proliferated during the COVID-19 pandemic:

> *The disintermediation of news sources sparked by digitalisation, growing polarisation and persistent uncertainty over recent years, have provided fertile ground for the weaponisation of information. The current context, initially a public health emergency and increasingly an economic and societal crisis has only exacerbated the viral power and pervasiveness of "fake news"*(Gooch, 2020).

The worrying thing is that research shows that false claims spread more easily than accurate ones because they are devised to grab attention (Klepper, 2020). For example, scientists at the Massachusetts Institute of Technology analysed more than 126 000 stories, some true and some false, that were tweeted millions of times over 10 years from 2006 to the end of 2016. They found that misleading or incorrect stories travelled six times faster and reached more people (Klepper, 2020).

The prevalence of fake news is illustrated by the announcement on 11 August 2020 by Facebook that in order to combat the rapid spread of dangerous information it had taken down seven million posts that spread COVID-19 misinformation through Facebook and Instagram between April and June. The company also put warning notes on 98 million COVID-19 misinformation posts on Facebook in April and June 2020 labelling posts that were misleading but not deemed harmful enough to remove (Lerman, 2020).

News coverage by the media plays a critical role in the creation and dissemination of false information. For instance, on 5 April 2020, News24 in South Africa made a mistake in a news report stating that Bill Gates intended to test a possible COVID-19 vaccine exclusively on subjects in Africa. News24 became aware of their error and apologised for it later that evening. Two days later News24 stated that they had retracted the article and explained the details behind the fake news article that was passed as a factual news story (Cowan, 2020).

In southern Africa learners have been at home during school closures resulting from the pandemic, and so they have had many hours to connect to the internet. Although most have not been able to learn effectively online because of the volume of data required and unaffordable, unreliable and inaccessible internet connectivity, mobile phones are the most common means of connectively, and most families own them. This means that the learners would have opportunities to access social media and be exposed to fake news. They may not have the skills to distinguish between true and false news, and so they may believe, share and act on unverified information because it originates from trusted sources such as friends or family members.

In a large study on the ability of young adults to question, verify and accurately identify the information they find online, Stanford researchers found a "distressing" inability to decipher online content and a general lack of understanding of how social media platforms function (Domonoske, 2016). In addition, learners, like all online consumers are subject to "information overload", where high volumes of information overwhelm them so that they become confused and thus are less likely to assess the credibility and trustworthiness of the information accurately (Renjith, 2017).

Moreover, studies conducted to investigate the correlation between fake news and demographics on social media discovered age and level of education to be the two main factors contributing to the spread and acceptance of fake news (Guess et al., 2019; Rampersad & Althiyabi, 2020).

However, it remains largely unknown why high school learners, particularly, continue to share false information. For some it may be to amuse or grab the attention of others, but for others it may be a genuine attempt to keep up with current affairs (Mercier, 2020). As the virus is new, the public have little knowledge about the virus, which has enabled the spread of fake news. Additionally, learners are said to perceive news supplied or endorsed by the government as, among other things, boring, delayed, insufficient, conflicting, ambiguous or not transparent, and therefore, they prefer social media as an alternative and more interactive information source (Jang & Baek, 2019; Mercier, 2020).

More worryingly, a survey conducted at Loughborough University in the United Kingdom (UK) reported that young people are intentional distributors of inaccurate information. The survey results indicated that minors, as opposed to adults, were more likely to fall prey to fake news media platforms because their cognitive skills are not able to assess and process the information critically.

5.3 Impact of fake news

"Just as the virus lodges in people's lungs, dangerous ideas are infecting their minds." (Lerman, 2020)

Fake news has led to some disastrous consequences globally. For example, in the article titled "Can fake news affect the stock market?" Rapoza (2017) postulates that fake news had a major impact on the United States of America (US) stock market in 2013. The author noted that US$130 billion in stock value was wiped out in minutes following a tweet by Associated Press about an "explosion" that purportedly injured Barack Obama, the then American president.

The effect of fake news has become a major concern in public health (Pulido, et al., 2020). Indeed, as early as the late 1990s, disinformation relating to the measles-mumps-rubella vaccinations in the UK and US led to a decrease in immunisation behaviours between 1999 and 2000 (McKee et al., 2019).

During the Ebola outbreak in the Democratic Republic of the Congo, rumours about the Ebola vaccine having the potential to render its recipients sterile were widespread in that country. This false information deterred people from seeking treatment or receiving vaccines from clinics (Spinney, 2019a). In addition, misinformation led to unsafe burial practices of those who had died of Ebola, resulting in those around the deceased being exposed to the virus, which found new hosts and continued to spread (Brainard & Hunter, 2020).

With the outbreak of COVID-19, the *Economist International* (2020) reported that the claim that the virus can be cured by drinking methanol led to more than 700 deaths in Iran, and the false information that it is spread by 5G transmitters convinced arsonists in Britain to carry out more than 90 attacks on phone towers (Lerman, 2020).

In Africa, rumours and reports of formulations and remedies as cures for COVID-19 have also circulated. In Nigeria, Nebe (2020) reported that concoctions derived from mixing garlic and honey and drinking cow urine were seen as cures for COVID-19. As a result of fake news, some people believe that black Africans are less susceptible to contracting – or dying from – the virus.

In South Africa, fake news that COVID-19 testing swabs were infected and were being used to spread the virus went viral (Burdin, 2020). Although the unverified news or rumours were quickly dispelled, some people who believed the fake news opted not to be tested for fear of becoming infected with the virus.

Fake news that directly affected learners and their parents was sent out to the media on Wednesday 25 March 2020 allegedly by Gauteng Education Department spokesperson, Steve Mabona. This statement claimed that schools would not "reopen on 14 April, as stipulated, due to the rapid increase of coronavirus". It went on to state that the department would be informing schools that the opening date might be pushed back to 10 September 2020, and that schools may only resume in 2021 and "all students will repeat the same class they started this year" (Chothia, 2020). To counter this, Mabona wrote "Fake" over it to alert the media and the public.

COVID-19 is also affecting the mental health of people. False information from various social media platforms is increasing depression and anxiety. A study conducted in South Korea investigated the impact of COVID-19 on psychological health: more than 50% of respondents indicated that they had been severely affected by the outbreak (Jung & Jun, 2020). Some studies in Africa have highlighted that a "mental health catastrophe" is the result of COVID-19 misinformation (Ornell et al., 2020; Tasnim et al., 2020; Wessels, 2020). As a result of the pandemic, people have become increasingly anxious about their physical, mental and financial wellbeing.

The impact of fake news on the populations of Eswatini, Malawi and Zimbabwe, and especially teenagers, during the pandemic, is very difficult to ascertain from the limited number of online articles and reports available. What is available on the internet indicates that some interventions by governments, nongovernmental organisations, donors, volunteers and international agencies have been undertaken in the three countries to disseminate accurate information about COVID-19 and increase awareness of fake news.

In Eswatini, to help children cope with feelings of anxiety while preventing stigma and discrimination arising from the pandemic, a mental health and psychosocial programme for students is broadcast weekly on the radio (Daries & Valenzuela, 2020).

In Malawi, the chairperson of the Malawi Media Institute of Southern Africa, Teresa Ndanga, has engaged with some traditional leaders in the Mulanje district warning them of the dangers of fake news about the COVID-19 pandemic and the forthcoming presidential election. She also helped them understand how they could detect fake from factual news and urged the leaders to ensure that their subjects were receiving correct information (Mkupatira-Mana, 2020).

Radio host, Meclina Chirwa, is also trying to dispel myths about COVID-19 through her new talk show called "Let's talk about Corona". She uses expert interviewees to challenge coronavirus fake news on a radio station that has a wide reach into rural areas. "As journalists, we need to tell the truth, and we can do this using radio to reach the rural masses," said Chirwa (Harrisberg, 2020). Given that radio is the prime source of news and information in Malawi, one can assume it reaches high-schoolers.

A very interesting initiative has begun in Zimbabwe. To counteract the spread of COVID-19, Zimbabwean youth working with development charity, Voluntary Service Overseas, (VSO) have taken to Twitter, WhatsApp, Facebook, and radio to comb through online comments, identify and correct COVID-19 misinformation. Fake news – such as "Drinking alcohol will kill the coronavirus."; "It is okay to share face masks."; "Africans cannot get COVID-19."; and "The pandemic is not even real." – is rife (Harrisberg & Ndhlovu, 2020).

A survey by the South African-based Ichikowitz Family Foundation has found that across Africa 86% of Africans aged 18–24 own a smart phone and nearly 90% use it for social media. According to the survey, 52% of young Zimbabweans felt that fake news severely impacted on their ability to stay informed, even before the coronavirus hit (Harrisberg & Ndhlovu, 2020). While the tech giants, WhatsApp and Facebook, have teamed up with African governments to tackle fake news through interactive bots, adverts and push notifications, the VSO volunteer team have been tackling the problem in their communities. Using information provided by the WHO, the volunteers have gone online to dispel misconceptions, inviting hundreds of Zimbabweans to WhatsApp groups as well as Twitter and Facebook conversations (Harrisberg & Ndhlovu, 2020).

"There is a common saying that 'ignorance is bliss'. Well, in this instance, ignorance is not bliss, if anything ignorance is death," said Bridget Mutsinze, a volunteer based in the capital, Harare (Harrisberg & Ndhlovu, 2020).

6 Survey results

The results of the South African and SADC region research are summarised in this section. In both cases, those who responded to the surveys had access to technology and connectivity and could afford the data costs – thus they were relatively privileged groups in their countries. As those who lacked access to technology and connectivity would not have been able to complete the survey, the samples are not representative of their populations. Moreover, the sample sizes are small, and so the results must be treated with caution.[5] The descriptive statistics of interest are provided below.

6.1 South African research

The South African research team posted two surveys on social media platforms – one for high school learners and the other for parents/caregivers and teachers.[6]

The main results of the learner survey were:

1. Most of the 49 learners who responded came from Gauteng (53%), followed by the Western Cape (30%).
2. On average they were 16 years old and most were female (66%)
3. All the participants owned at least one device and 93% of the respondents had access to a cell phone.
4. 73% of the respondents used social media/online platforms as their main source of news and information.
5. 73% preferred to use WhatsApp, followed by Instagram, TikTok and Facebook
6. 92% of learners, especially the older ones reported that they are aware of what fake news is and the impact of spreading fake news.
7. 23% of the respondents indicated that they hastily shared information with peers, often without verifying, and 49% of them shared it sometimes.
8. On average they were anxious about fake news on COVID-19.
9. There was some suggestion of a positive relationship between learners' level of awareness of fake news and parent/teacher support in counteracting the dissemination of fake news.

The following could be gleaned from the 22 parents/caregivers and teachers who completed the survey:

10. Most were female and in their 30s.
11. Most were situated in Gauteng and KwaZulu-Natal.
12. More parents than teachers responded.
13. 96% obtained their information online, followed by television, peers/friends and radio.
14. 91% used several social media, most often WhatsApp, followed by Facebook, Instagram and Twitter.
15. All were aware of fake news but were unsure if they could identify it.
16. Their responses indicated an immediate urge to share "interesting" or "aggravating" news with others.

6.2 SADC research

There were 313 respondents from Eswatini, Malawi and Zimbabwe for the SADC online survey for high school learners. The results of the survey indicated that:

1. 61% came from Malawi, with 23% from Eswatini and 16% from Zimbabwe. The majority of the learners (66%) were between the ages of 16 and 19 years and in Forms 3 to 5, while most of the other respondents were between 12 and 15 years old and in Forms 1 and 2.
2. The proportion of females and males was almost equal.
3. 84% of the learners were aware of fake news, while 16% were not aware.
4. 90% of the learners who were most aware of fake news were 16 to 19 years old, and 88% were male.
5. Learners obtained their information about COVID-19 from both social and traditional media

[5] The research teams included simple Chi-squared tests and correlation analyses in interpreting the data but given the limitations of the samples they will not be discussed in this paper.

[6] The survey questions for the South African study can be accessed through the original paper on the JET website: https://www.jet.org.za/resources/theme-6-research-report-final-1.pdf/download.

6. The vast majority (81%) had received misleading information on the coronavirus.
7. Of the respondents who had received information on COVID-19 and were aware of fake news, 91% reported that the information made them feel anxious.
8. The majority indicated that most reliable information was from television (42%) and radio (22%).
9. 72% of learners thought that accessing reliable sources would help to curb the impact of fake news about COVID-19, while 162 (47%) felt that counselling (teacher and parent support, and learning) would help.
10. Learners had mixed feeling about going back to school during COVID-19

6.3 Discussion of results

The international literature provides a background for the results of the two studies. As we have seen above, in the limited time the researchers had to complete their research, they found few international studies of high-schoolers' relationship to fake news and none in Africa. However, the results of the researchers' analyses do accord with some of the findings in the literature reviews.

People respond to fake news differently, and it has been argued in the literature that age plays a key role. Studies conducted to investigate the correlation between fake news and demographics on social media discovered that age and level of education were the two main factors contributing to the spread and acceptance of fake news (Guess et al., 2019; Rampersad & Althiyabi, 2020). The results of the learner surveys suggest that this relationship also holds among their respondents: the indications are that the older high school learners in higher grades/forms are more likely to be aware of fake news than the younger high school learners.

In the SADC region, the results indicate that youth and adults use both traditional media, such as radio and television, as well as social media to obtain news and information. Given the wide reach of television, radio and smart phones in southern Africa, this makes sense. However, the use of several online platforms by learners, parents and teachers could imply that the users may be overloaded with information and more likely to be exposed to misinformation or disinformation. Additionally, if they cannot identify fake news and share it on social media, they could be contributing to the dissemination of false news, with all the dangers it presents. On the other hand, the multiple sources of news that the respondents used could also act as a check on the spread and impact of fake news, by helping to corroborate accurate information and casting doubt on suspect information.

The high level of awareness of fake news among the high school learners who participated in the South African (92%) and SADC studies (84%) is encouraging as an important first step in addressing the problem of fake news, but it also brings learners' ability to detect fake news and its effects on them into sharp focus. The fact that 254 (81%) of respondents in the SADC study indicated that they felt anxious after receiving information on COVID-19 that was later proven to be false, suggests that they lacked the skills to scrutinise information to determine its veracity.

Consistent with this result, the outcome of a study conducted by Wilson and Umar (2019) in northern Nigeria revealed that although respondents reported that they had heard about fake news, they were poor at verifying information before sharing it. This suggests that interventions incorporating strategies that focus only on raising awareness about fake news among high school learners will be ineffective, unless they also equip the learners with the requisite skills to detect false information.

7 Strategies to combat fake news

"The only solution," Ferrara said, "is education." (Klepper, 2020).

The three broad strategies identified in the literature and from the survey research comprise the communication of accurate information, raising awareness of fake news, and the development of critical thinking and media literacy skills to detect fake news; and within those, the critical roles of the government, media, civil society and educators. These are discussed below.

7.1 Distributing accurate information

Given that mis- and disinformation about COVID-19 have proliferated on social media, Frenkel et al. (2020) stress the urgent need for effective communication from trusted sources about the pandemic. In a study investigating

the impact of factual information in refuting the flood of misinformation during a pandemic, van der Meer and Jin (2020) discovered that the availability of evidence-based information during a disease outbreak is imperative to curb reliance on inaccurate information.

Governments play a critical role in curbing the propagation of fake news during the COVID-19 pandemic by communicating regularly with the public and widely publishing accurate information about the novel coronavirus and the safety measures needed to limit the spread of the infection, as well as up-to-date statistics about the progress of the disease.

In the early stages of the South African lockdown, the possible impact of false information related to COVID19 was largely addressed by the government (which communicated effectively) and media that were well organised and responsive to the public's needs. The government held many informative media briefings to combat false information, thus creating a partnership of trust between government and media. In addition, myths about the virus are debunked on the official government resource portal about COVID-19 (https://sacoronavirus.co.za/faqs/). The effectiveness of the government's communication strategy was praised by the WHO (Maromo, 2020). Professor Herman Wasserman, a media studies lecturer interviewed in UCT News, contends that the South African media have "mostly [trodden] a careful path" by collaborating with the government where justified and asking critical questions where needed (Bernardo, 2020).

As fake news began to spread, and to dissuade people from spreading false information, the government issued a Government Gazette (Republic of South Africa, 2020) stating that the dissemination of fake news or disinformation about COVID-19 was a criminal offence in South Africa (Lubisi, 2020). Regulations relating to COVID-19 in terms of the Disaster Management Act No. 57 of 2002 criminalise the distribution of fake information in South Africa via any channel of communication. The section states that:

1. Any person who intentionally misrepresents that he, she or any other person is infected with COVID-19 is guilty of an offence and on conviction liable to a fine or to imprisonment for a period not exceeding six months or to both such fine and imprisonment.
2. Any person who publishes any statement, through any medium, including social media, with the intention to deceive any other person about—
    a. COVID-19;
    b. COVID-19 infection status of any person; or
    c. any measure taken by the Government to address COVID-19, commits an offence and is liable on conviction to a fine or imprisonment for a period not exceeding six months, or both such fine and imprisonment.

(Republic of South Africa, 2020)

This legislation has attracted criticism from a number of quarters. The regulations also apply to high school learners, yet as we have seen, many young people lack the skills to identify fake news and understand social media platforms (Cooke, 2018; Journell, 2019). Moreover, critics pointed out that it could/might be difficult to determine if someone inadvertently shared fake news as opposed to intentionally creating and spreading it. In addition, many commentators have raised the threat that legislation poses to freedom of expression.

In Eswatini, similar regulations have been enacted. In addition to criminalising publications with the "intention to deceive", the regulations prohibit people, institutions and organisations from certain activities including "spreading rumours or unauthenticated information about Covid-19". The provision also prohibits "the use of print or electronic media" for information on COVID-19 "without the prior permission of the minister of health". These offences carry a significant fine of up to R20 000 or imprisonment for up to five years (Hodgson, Farise & Mavedzenge, 2020). The legislation in Zimbabwe has been in place for several years, with no mention of COVID-19 and is similarly draconian.[7]

Regulating against fake news and promoting freedom of speech needs a fine balancing act, which is often almost impossible to achieve. For this reason, governments must be careful not to severely erode citizens' freedom of expression in their determination to combat misinformation about COVID-19.

[7] In Zimbabwe, the applicable regulations do not even prohibit misinformation about COVID-19 itself. *Under the heading of "false reporting during lockdown" the regulations criminalise the publication or communication of "false news" that is "about any public officer, official or enforcement officer involved with enforcing or implementing the national lockdown in his or her capacity as such, or about any private individual that has the effect of prejudicing the state's enforcement of the national lockdown"* (Hodgson et al., 2020)

It goes without saying that the media houses and journalists have an important role in health communication during the pandemic. A key issue is misleading clickbait: media houses should acknowledge that this has the potential to distress the public by causing fear and so may dilute the effect of counter measures to combat the outbreak. To promote awareness, journalists are encouraged to work closely with healthcare professionals, health scientists, government departments and community leaders to ensure accurate information is disseminated (Spinney, 2019b).

In South Africa, for instance, increased collaboration between the private sector, non-governmental organisations and government agencies saw the establishment of an anti-misinformation initiative. Organisations formed before COVID-19 as fact-checking institutions have also used their experience in the field to develop their existing tools to verify information about the pandemic. For example, "Live Guide" by Africa Check is an "all-in-one go-to" webpage with tips and resources that aim to help the public and institutions curtail the spread of COVID-19 misinformation (Africa Check, 2020). Similarly, Media Monitoring Africa has set up an online portal called "The Real 411" through which South Africans can report misinformation/disinformation with the aim of investigating it and potentially spreading a counter-narrative if it is found to be fake news (Lubisi, 2020). These are important South African resources for combatting the dangers of fake news and thereby reducing stigmas and fears.

However, it is also true that for media outlets and journalists in many countries in southern Africa, including in Eswatini and Zimbabwe, the pandemic has become a pretext to gag journalists and media outlets, especially those who criticise governments' responses to the pandemic. In Zimbabwe, the government unduly interfered in the work of at least eight journalists, so much so that the Media Institute of Southern Africa had to intervene through the High Court asking for – and obtaining – a ruling that forbids further disruptive action. In Eswatini, two editors of newspapers are being accused of writing "negative things" about King Mswati III, regarding the pandemic (Noury, 2020).

7.2 Awareness of fake news

A telling comment by a traditional leader in Malawi underlines the importance of raising awareness of fake news. After an intervention that helped traditional leaders understand fake news, he said, "We have learnt important things that have opened our eyes. In rural areas, we believe and share any information we come across on social media and even some media houses without verifying it" (Mkupatira-Mana, 2020).

Clearly, there is a great need to help people understand what fake news is and how to identify it. More important, however, is to create awareness around the impact of sharing potential fake news, even if it is only intended to share surprise or amusement.

Given the popularity of WhatsApp amongst learners, parents and teachers emerging from the survey responses, any awareness-raising campaigns about fake news would do well to focus on this platform. WhatsApp is private in the sense that engagement is between specific individuals or in closed groups, and information is encrypted. This makes it difficult for parents and teachers to be aware of information that is being spread using the messaging service, and so it is more difficult to intervene. Thus, initiatives aimed at preventing the spread of fake news should address these private, closed networks without impacting on privacy.

Other social media platforms have the advantage of being public, so parents and teachers can monitor children's engagement with these platforms. Of course, teenagers can find ways around this. Regardless, adults need to have some access to what their children are absorbing and posting on their online platforms, so that they can mitigate harm by teaching safe and responsible use to their children.

To avoid spreading false information, Klepper points out:

> *Researchers who study Americans' changing media habits recommend that people turn to a variety of sources and perspectives for their news, use critical thinking when evaluating information on social media and think twice about reposting viral claims. Otherwise, they say, misinformation will continue to flow, and users will continue to spread it* (Klepper, 2020).

The samples of high school learners surveyed showed that most were aware of fake news but did not seem to have the skills to identify fake news stories on COVID-19, which made them feel anxious. Obviously, that awareness alone is not enough to deal with the effects of fake news. Raising awareness among learners about what fake news is and equipping them with skills to help them navigate the information on various media platforms would both be most effective.

As Talwar et al. (2019) point out, if learners are quick to trust and share news on social media, even if they have not distinguished whether that news is accurate or false, then the adoption of fact-checking tools and authenticating methods are essential skills that they need to reduce the spread of misinformation.

7.3 Media literacy education

As, arguably, one of the most vulnerable groups to the uncontrollable spread of misinformation during the pandemic are high school learners with access to social media, it is important to equip them with the critical thinking skills and media literacies to protect themselves against fake news and risky behaviour. The teaching of media literacies has the potential to equip high school learners with the skills to process and verify information and empower them to deal with an era of information overload beyond the COVID-19 pandemic (Malita & Grosseck, 2018).

Studies of media literacy education have shown improvements in the critical thinking skills of students. A study in Los Angeles involving more than 2 000 middle school students found that media literacy training could increase critical approaches to media and recognition of the effects of violence in media (Webb & Martin, 2012). Another study evaluated partisan political posts and involved 2 101 youth aged 15–27. The study found that those with higher levels of media literacy training were more likely to rate evidence-based posts as accurate, compared to posts containing misinformation (Kahne & Bowyer, 2017).These two studies illustrate the potential that this tool has for curbing the spread of fake news in the region.

Various authors have identified skill sets that can assist in critically evaluating online content and countering the spread of fake news (Dell, 2019; Jones-Jang et al., 2019; Polizzi, 2020). These include analytical and critical thinking skills and related literacies, namely, information literacy, media literacy, digital literacy and scientific literacy. The argument for the set of literacies is that these address different issues as far as information in a digital landscape is concerned. The different literacies are described below.

7.4 Information literacy

According to Jones-Jang et al. (2019), information literacy is the foundational competency that online media consumers require to verify the accuracy, relevance and reliability of a news item or source. People with information literacy skills are considered to have “close-reading skills, scepticism, awareness of their biases, understanding of how information is produced and the ability to synthesise information from different sources” (Delellis & Rubin, 2018). These skills are key in detecting fake news.

To lessen the burden of fact-checking and evaluating sources in a time of information overload, some educators have advised their students to do this – but only for those items they intend to act on or to share (Berdik, 2016).

7.5 Media literacy

Media literacy refers to the broad ability to access, analyse, evaluate, create and act, using all forms of communication (Farmer, 2019).

Palmer (2017) argues that a media literacy curriculum should include the following:

1. Looking for sources in articles.
2. Checking news sites (using “About Us” tabs and site archives).
3. Searching for multiple sources to verify content.
4. Using fact-checkers.
5. Showing the difference between fake and biased news.
6. Acknowledging personal biases.

Some news literacy educators in the US have found that employing teenagers’ general dislike for being told what to think could be a strong motivating factor for learning about fake news (Berdik, 2016). Teenagers appear more interested in uncovering fake news from the perspective of deciding something for themselves and not being fooled.

7.6 Digital literacy

Digital literacy is the ability to navigate the online spaces confidently and successfully. This goes beyond being able to use a device or a social media platform. While many educators and parents believe that teenagers are online natives, this does not mean that they are not in need of digital education and guidance. Sharing information such as web-browser extensions that provide alerts about possible fake news items can help users navigate through more reliable sites in online searches, according to Malita and Grosseck (2018). However, Rubin (2019) states that such technologies can assist but do not replace human judgement; we cannot solely rely on automated solutions to make a judgement on what might be harmful.

7.7 Scientific literacy

Being guided by science during a health crisis is obviously very important, and so information that is widely shared should be based on scientific research, rather than untested notions and dangerous solutions. Health literacy, and more broadly, scientific literacy, plays a significant role in combating misinformation. Correct health information is pivotal to fighting both a disease and the fear surrounding it.

Scientific information is important in fighting fear and stigma in any public health crisis, but often the lack of scientific literacy skills means that people are unable to fully understand the advice given. To investigate the school students' need for scientific literacy, Nordheim et al. (2019) conducted a study on Norwegian teenagers who had completed their compulsory schooling (Grade 10). They found that these learners generally did poorly in identifying and critically evaluating health claims made in a simple news item, although those with higher science marks fared better. Thus, they argue that science curricula should focus less on facts and more on skills, to develop learners' scientific literacy.

8 Recommendations

The primary goal of education is to create a responsible and informed citizenry. In the digital age, with so many sources of information at their disposal, learners need to be guided and taught critical thinking skills and the key literacies to become informed and responsible citizens. During the COVID-19 pandemic it is crucial for learners, potentially spending more hours online at home, to be able to identify fake news and navigate its negative effects to avoid stress, anxiety, confusion, or risky behaviour from exposure to disinformation.

However, the wider societal environment of fake news also needs to be addressed:

1. To halt the spread of mis- and disinformation, governments in the SADC region should communicate frequently with the media and public through all the popular communication channels to provide up-to-date, accurate and trustworthy information about the state of the COVID-19 pandemic in their countries. Governments should also redouble their efforts to counteract false information through well considered, comprehensive communication strategies using every means possible to display and disseminate accurate information about the novel coronavirus and how to prevent infection.
2. Beyond criminalizing the spread and distribution of false information, governmental and non-governmental partners should develop joint anti-misinformation initiatives to create awareness about fake news, debunk myths about COVID-19, and support fact-checking organisations.
3. Groups of activists and volunteers like the VSO volunteer team in Zimbabwe should be encouraged to tackle the fake news problem in their communities through social media conversations.
4. Media houses should continue to improve their ability to detect fake news by enhancing and updating their verification processes in the newsrooms before finalising their stories.
5. While, as indicated above, WhatsApp and Facebook have teamed up with African governments to tackle fake news through interactive bots, adverts, and push notifications, globally, Facebook, Instagram and other social media companies should improve the detection of posts or links containing false information related to any pandemic and go further than simply putting warning notes on misinformation posts, and instead take them down.
6. The national education departments in the four countries need to review their school curricula to make sure that they include the development of critical thinking and key literacy skills so that learners

understand how to detect false information and the dangers of spreading it. This will enable them to best navigate the digital age.

7. If education departments decide to distribute digital learning materials and mobile devices in schools,[8] the development of the key literacies in learners should precede or accompany such an initiative.
8. National education departments should ensure that the key media education literacies are included in initial teacher education and continuing teacher professional development so that new and serving teachers learn these essential 21st century skills.
9. Education departments and schools need to inform parents/caregivers about fake news so that they can monitor what online platforms and social media their children are accessing and correct misinformation and harmful posts.

9 Concluding comments

It is noteworthy that as far as could be established, the two studies by the South African and SADC region research teams are the first to investigate the impact on high school learners of fake news during the COVID19 pandemic in southern Africa.

This paper has built on their research to provide an overview of the impact on high-schoolers of fake news in general, and particularly during COVID-19. Learners who are at home as a result of school closures have greater opportunity to go online, whether to access educational materials or connect to social media with smart phones - even those with limited access and data. Together with radio and television access, the learners are likely to be exposed to a deluge of false and accurate information. As we have seen, the older teenagers are most aware of fake news, but lack the critical thinking and literacies skills to distinguish between what is false and what is true. This means that they can share false information and makes them very vulnerable to the impact of misleading and harmful posts.

The challenge now is for governments, teacher education faculties and educators to incorporate the critical thinking and literacy skills into their syllabi as a first step towards addressing the current environment of fake news. Parents and caregivers also need to help counteract fake news and prevent its spread.

Von Reppert-Bismark and Schleicher (2020) argue that how to interrogate sources of information must become integrated into school and teacher training curricula, which rank in importance alongside the basic literacies of reading and writing. They emphasise that "It has applications far beyond fake news and disinformation – to securing the act of making informed decisions and with that, functioning democracies." In the wider society, information overload and its overwhelming effects can lead to widespread confusion and anxiety and this negative climate must be counteracted with trustworthy information. What is needed is for governments, in collaboration with civil society and media, to come up with an all-inclusive approach to deal with false news. As SADC countries confront the spread and impact of false information, they need to go beyond legislating and criminalising the spread of false information, and rather build collaborative partnerships in society to educate people about the pandemic and counter the false information.

The threat to democracy of unchecked fake news should be a wake-up call for citizens. We all need to be "positively suspicious" and approach news and information with healthy scepticism (Retief, 2020). Agreeing with von Reppert-Bismark and Schleicher (2020), Walker warns that

> *Schools are preparing a generation of bubble children without the immunities to deal with the information toxins that surround them. Quality information is to a thriving democracy what clean air and clear water are to public health* (Walker, 2016).

8 There is currently a surge of interest in technology in education and specifically a new proposal to provide one device per child. This is one area that has been studied quite extensively in various developing countries, and the evidence consistently shows that providing technology to individual learners is not the most cost-effective method of improving learning outcomes; and in every country where it has been implemented it was deemed a failure (Spaull, 2019).

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