Social Work/Maatskaplike Werk Vol 57 No 3; Issue 1
http://socialwork.journals.ac.za/pub doi:http://dx.doi.org/10.15270/52-2-946

SOCIAL WORK 4.0? THE FOURTH INDUSTRIAL REVOLUTION AND SOCIAL WORK EDUCATION: A SOUTH AFRICAN PERSPECTIVE

Mohamed Safodien
Mr Mohamed Safodien, Department of Social Work, University of the Western Cape, Bellville, Cape Town.
Mohamed Safodien: msafodien@uwc.ac.za

The First and Second Industrial Revolutions created significant disruptions in the social life and economic activities of human societies globally. Traditionally, social work practice has had a strong "face-to-face" foundation. Emerging technologies in the Third and Fourth Industrial Revolutions such as computers, mobile technologies, big data, internet of things, artificial intelligence and virtual reality are now creating a potential disruption in the traditional practice of social work. The emergence of e-social work and social work informatics broadens the scope of practice of social work in the 21st century. This article will examine the implications for social work education.

Keywords: digital era, e-social work, Fourth Industrial Revolution, social work education, social work informatics, social work profession

SOCIAL WORK 4.0? THE FOURTH INDUSTRIAL REVOLUTION AND SOCIAL WORK EDUCATION: A SOUTH AFRICAN PERSPECTIVE

Mohamed Safodien

Mr Mohamed Safodien, Department of Social Work, University of the Western Cape, Bellville, South Africa.

INTRODUCTION

The social work profession has always been regarded as a people-centred profession. It has fulfilled a crucial role in responding to the social issues affecting humanity. Major societal changes such as the First and Second Industrial Revolutions had created significant social challenges such as poverty and homelessness in the new urban centres of the world. According to Rifkin (2016), these revolutions led to greater efficiency in society but also created disruptions in the social norms and economic activities of human societies. It was observed that "social welfare in South Africa was at a critical stage as a result of poverty and unemployment due to urbanisation and industrialism" (Mdedzi, 2015:51).

Schwab (2016) stated that the speed at which digital technologies advanced during the latter part of the 20th century had significantly transformed the nature of human relations and communication. Schwab (2016) further posits that in the 21st century the advancement of digital technology such as artificial intelligence and other disruptive technologies including the internet of things (IoT) will result in the blurring of lines between humans and digital technologies. Schwab (2016) refers to this as the Fourth Industrial Revolution (4IR). IoT refers to the connections of multiple digital devices to the internet. According to Goldkind and Wolf (2015), since 2008 the number of devices connected to the internet has surpassed the number of humans on the planet. Davis (2016) also noted that emerging technologies in the Fourth Industrial Revolution are initiating new conceptions of what it is to be human because of the convergence of the biological realm and the digital world. The emergence of concepts such as the *quantified self* (QS) is another feature of the Fourth Industrial Revolution. According to Shin & Biocca (2017), QS refers to the use of wearable digital devices such as smart watches that are connected to the internet to engage in self-tracking in the areas of human biology with the aim of improving human performance. Van den Berg (2017:3) described the rapid advancement of the digital era as a *digital tsunami*.

The social work profession has not been immune to the rapid growth and impact of the digital era. Ryan and Garrett (2018:33) noted that the 'digital revolution' has had a significant impact on the traditional methods of social work practice. Baker, Warburton, Hodgkin and Pascal (2018) stated that social workers are struggling to adapt to the rapidly changing world because of the exponential advancements in technology. The global COVID-19 health pandemic of 2020 has also challenged the traditional face-to-face form of social work education and practice as all sectors in society had to adhere to government-imposed regulations. This included the promotion of social distancing to curb the spread of the virus. Amadasun (2020) comments that the pandemic had a destructive impact on the psychological and social wellbeing of society's most vulnerable. These aspects have challenged the social work profession to review its traditional methods to effectively respond to the adverse impact of the pandemic.

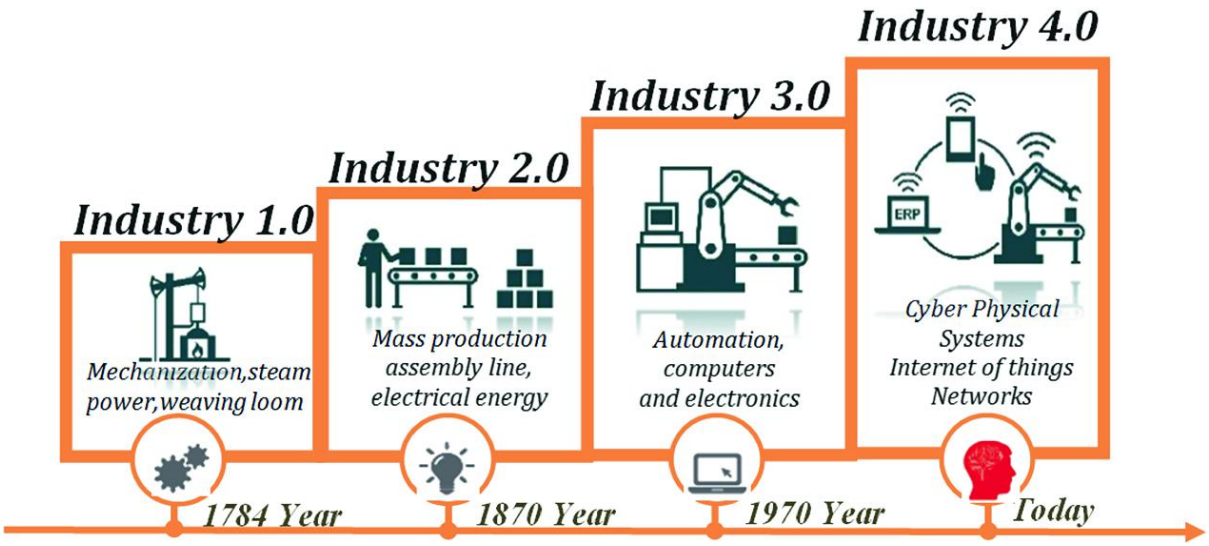
Ballantyne, Wong and Morgan (2017) noted that the Fourth Industrial Revolution presents new challenges for the human services professions in finding ways to harness the use of emerging technologies such as mobile smartphones, social media, wearable technology and the internet of things. The exploration of this response should commence with examining how social work education is producing social work graduates who can engage meaningfully in this digital era. Zorn and Seelmeyer (2017) expressed the view that for the social work profession to engage effectively with the technologies of the Fourth Industrial Revolution, they must be infused in social work curricula. Zorn and Seelmeyer (2017) acknowledge that this can be challenging in an already overcrowded curriculum. This article will

explore the implications for social work education in South Africa of incorporating curricular content that will prepare social work graduates to engage effectively with the opportunities and challenges of the Fourth Industrial Revolution.

THE INDUSTRIAL REVOLUTIONS

Davis (2016) postulated that humanity has undergone three distinctive economic and societal changes. The First Industrial Revolution occurred from the late 18th century to the late 19th century. This period was characterised by humanity's movement from the reliance on animals, and human effort to the use of steam and other mechanical powered means of production. The Second Industrial Revolution occurred between the end of the 19th century and into the first two decades of the 20th centuries. The inventions of electricity wired communication and mass production of goods were the key features of this period. The Third Industrial Revolution emerged from the 1960's with the introduction and mass use of electronics, personal computers and the internet. Schwab (2016) points out that the term *revolution* refers to a radical change and that throughout human history revolutions have occurred that have profoundly changed the economic and social systems of society. This has yielded both advances in society but also created social problems that required interventions. Table 1 provides an overview of the respective Industrial Revolutions and their most distinctive features that have impacted on society.

TABLE 1
THE INDUSTRIAL REVOLUTIONS



Source: Karabegovic, Turmanidze & Dasic (2020)

Zastow (2016) says that the Industrial Revolutions allowed societies in Europe and America to flourish as a direct consequence of technological advances. Zastrow (2016) further states that people migrating from rural areas to the new industrialised urban areas created widespread poverty because of the limited work opportunities and the severing of family and kinship ties with the consequent loss of community identity. To address these social ills social welfare services and the social work profession emerged in response to the impact of industrialisation and urbanisation. Schwab (2016) stated that society is on the brink of a technological revolution that will again fundamentally change the way humans will live, work and interact with each other. He states that this period will see the fusion of biological beings with technology. He refers to this period as the Fourth Industrial Revolution. Schwab (2016) also further states that this period will again, as previous revolutions did, create both challenges and opportunities. The opportunities include the rapid advancements of artificial intelligence, but they could also engender further inequalities in society.

"By 2010, the number of computers on the internet had surpassed the number of people on the earth" (Gershenveld & Vasseur, 2014:60) This observation demonstrates the pervasive impact that digital

technological advancement is having on humanity. Prisecaru (2016) stated that the Fourth Industrial Revolution will affect society and economies in different ways. Prisecaru (2016) further points out that 30% of the global population utilises social media platforms to connect, learn and exchange information and thus advocates that all nations and developing countries must understand these new technologies as well as their disruptive impacts. Xu, David and Kim (2018) also highlight the opportunities in the Fourth Industrial Revolution. Some of these opportunities include the lowering of barriers between inventors and markets, the increase role of artificial intelligence in assisting with low-skill activities or high-risk activities. The use of robotics can potentially enhance the quality of life of humans as they need to spend less time on the performance of menial tasks. Gleason (2018) stated that some of the benefits of the Fourth Industrial Revolution are that humans have developed the computer capacity to store and manage vast amounts of data. This allows for the enhancement of machine learning, noting that the Fourth Industrial Revolution "is not only automating production but also knowledge" (Gleason, 2018:2). This will have an impact on knowledge acquisition in society. Educational institutions are now not the only medium to produce and disseminate knowledge. Online search platforms such as Google and more specifically Google Scholar and YouTube have become new vehicles for teaching and learning.

Shoki (2019) commented that one of the challenges of major technological advancements in society is a fear that humans will be replaced by machines. He stated that this was observed in South Africa when banks were retrenching staff and replacing them with automated services. Shoki (2019) stated that technology is only beneficial to business sectors if the technology increases profits and decreases costs. Davis (2016) points out that a further challenge of the Fourth Industrial Revolution is that it may increase societal inequality; this raises concerns about security and challenges the notion of what it is to be human. The issues of inequality and personal identity are challenges that fall directly within the scope of practice of the social work profession.

Professions that have had a long tradition in helping humanity deal with the impact of societal changes are now confronted with a significant challenge to review and transform their practices in a way that would be responsive to future human problems and harness the benefits of technology to serve humanity. Ballantyne *et al.* (2017) confirms this by stating that in the Fourth Industrial Revolution human services must accept and embrace the still emerging technological ways to enhance human wellbeing.

EMERGENCE OF NEW TECHNOLOGY-DRIVEN PSYCHO-SOCIAL ISSUES

New psycho-social challenges are emerging as a direct impact of the digital era. According to Dresp (2020), approximately 6% of the global population suffers from internet addiction disorder, i.e. compulsive use of the internet. Alrobai, McAlaney, Phalp and Ali (2016) also state that digital addiction is becoming an emerging behavioural phenomenon in our global society. Sadiku, Omotoso and Musa (2019) found that studies conducted in Africa indicated that the excessive use of social media services such as Facebook, YouTube and Twitter were a distraction for young people. Youths are also being exposed in the online social media space to sexual predators and becoming victims of cyberbullying. Sadiku *et al*. (2019) observed that social media platforms are also emerging as a new method of terminating social relations. Mukasano (2014) explored parents' perceptions of their children's use of mobile devices and found that parents acknowledged the dangers of mobile devices in terms of issues such as cyber-bullying and sexting, but viewed their children's use of mobile phones as facilitating parent-child communication and interaction. Twenge (2017) conducted a longitudinal study on the impact of smartphone use by young people. The study found that the more time young people spend online or looking at screens, the greater the likelihood that they will report symptoms of depression. Salubi, Ondari-Okemwa and Tidings-Oyedarin (2018) explored the use of the internet by undergraduate students at two South African universities and found that students primarily used the internet as a coping mechanism rather than for academic purposes. The study also found that 88.2% of internet use was for social networking applications WhatsApp and 75.6% for Facebook. In 2018 the World Health Organization (WHO) listed Gaming Disorder on the 11th Revision International Classification of

Diseases (ICD-11). WHO described this digitally driven disorder as a pattern of impaired control over gaming and excessive engagement in this activity at the expense of other daily activities of life.

The above findings suggest that the technological advancements in the Fourth Industrial Revolution are creating both opportunities and new social challenges for humanity. "All industrial revolutions are ultimately driven by the individual and collective choices of people" (Davis, 2016:3). It is thus imperative that various sectors in society will need to develop strategies that can engage these challenges. The Fourth Industrial Revolution has the potential to drive disruptions in society but it is "in our power to address them and enact the changes and policies needed to adapt (and to flourish) in our emerging new environment" (Schwab, 2016:99).

SOCIAL WORK AND THE FOURTH INDUSTRIAL REVOLUTION

The social work profession needs to harvest the benefits and address the challenges of the age of the Fourth Industrial Revolution. In this regard it may be useful to examine some of the developments in the social work profession that are being influenced by the exponential digital advancements of the Fourth Industrial Revolution. The seminal observation is that in the future it may be that "nearly anything a social worker does face-to-face could theoretically be done online" (McCarty & Clancy, 2002:153), which may serve as the impetus to explore how social work can continue to play in meaningful role in the digital age of the 21st century.

Phillips (2017:443) conducted an auto-ethnographic qualitative study to examine the notion of the "computer social worker". The question that was raised is whether social workers who use computers as part of their assessment protocols are performing social work. Phillips (2017) expressed the view, based on her findings, that concern and care for another human being cannot be mediated by machines. Gillingham (2014) examined the impact that information systems (IS) are having on social work practice. Social work practitioners who participated in the study noted that the introduction of IS in social work agencies has increased the administrative tasks of social workers. Previously administrative tasks such as typing of practice reports were done twenty years ago by typist, but currently social workers are expected to complete this task themselves. Gillingham (2014:332) cited a participant who described the use of IS as "computerwork". This is based on the research findings that more time was spent on interfacing with the IS in terms of data capturing and case management than time spent with service users. Dombo, Kays and Weller (2014) observed that the use of online services in clinical social work is becoming more common. Social workers can play a positive role in these online services by offering their professional knowledge and skills to enhance the effectiveness of these services. This is especially in the areas of group facilitation skills. They also found evidence that users have reported positive experiences with online services facilitated by volunteers. Reamer (2015) expressed the view that the use of technology in social work is inevitable. But he cautioned that the use of a technology-mediated intervention can be both a powerful tool and a destructive tool if not used correctly or in an ethical manner.

Ryan and Garret (2018) examined the use of technology-mediated communications by social workers in practice. These included the use of Facebook, email and text-based methods. The research revealed varied experiences with their ICT use. Some found benefits and challenges with the use of Facebook. Those who indicated benefits cited that Facebook is a public domain and thus the information represented there is available for all to access, but 92% of the respondents expressed the opinion that they will not become "friends" with clients using Facebook. The participants in the research also indicated that the information about clients found on Facebook may be less reliable in court proceedings. The participants in the study also stated that email and text messaging were effective tools in the workplace to enhance workplace communication. The participants expressed a view that this might not be ideal as a means of therapeutic intervention. Ryan and Garrett (2018) concluded that all social work participants in the study maintained that face-to-face interactions with clients can potentially not be replaced, but there is an acknowledgement that there is a subtle move towards it. Griffin (2020) proposed that all social workers should need to understand and apply data science. The application of data science is defined "as the

ability to gather, manage, translate and communicate data in an effective way" (Griffin, 2020:2). Griffin (2020) stated that in the digital age, data is an ever-present reality for social workers and the effective use of big data can enhance service delivery and the administration of social service organisations. Griffin (2020) proposes that one of the benefits of the effective use of big data by social workers is that it can lead to greater accuracy in the identification of community needs. Goldkind and Wolf (2015), however, expressed the view that the use of big data can lead to the stigmatisation of individuals, groups and geographical areas.

In the South African context studies are emerging that attempt to offer empirical insights into the dynamics of the digital era and the potential implications of this for social work practice. Roestenburg (2014) mentions that since 2008 he has been involved in the design and implementation of the CORE Data Management System. The CORE system allowed social workers to utilise a web-based system to replace their paper-based files with electronic files. It allows for the capturing of social work reports, generation of statistical data on clients and service delivery data. It also made provision for an online supervision system. The implementation of the CORE had several benefits and challenges. The benefit was that it offered an opportunity for the social work profession to harness the opportunities offered in this digital age to streamline workflow operations in social work organisations. The challenges identified by social workers who used the CORE internet-based system included concerns about confidentiality and access to clients and organisational data. Another challenge was the continued resistance from some social workers to infuse technology into their practice. The CORE system also required that supervisors need to have the necessary training to use the system effectively.

Geyer, Le Roux and Hall (2019) initiated research that investigated problematic internet use (PIU) amongst students and its impact on the fostering and maintenance of healthy human relationships. PIU includes excessive engagement in online activities such as online gambling, compulsive downloading and uncontrollable texting or emailing. This research team employed a survey method and involved 498 second-year students at a South African university. The results of this study indicated that there was evidence that PIU is an emerging social issue where digital technology has become a pervasive feature of daily life. Geyer *et al.* (2019) recommended, based on the findings of the study, that social workers need to become more active in raising awareness of this problem and to be involved in policy development and services to address this problem at university level.

Nkuna, Jordaan and Zangle (2020) explored the perceptions of information technology among unemployed youths in Mamelodi, South Africa. The researchers stated that, because of the envisioned impact of the Fourth Industrial Revolution on widening the digital divide, it is imperative that unemployed youths must not be left behind by the government and the private sector.

This section provides insight into the potential impact of the Fourth Industrial Revolution on the social work profession. There is evidence that some practitioners in the field are starting to discuss various facets of the impact. Recommendations are also made that can assist the social work profession to adequately respond to the challenges and the opportunities of the Fourth Industrial Revolution. Social work has always been impacted by the industrial revolutions and its very emergence and relevance are intricately linked to the consequences of 1st and 2nd Industrial Revolutions. "Given this historic strength, social workers cannot ignore the explosive growth and pervasive impact of technology or fail to recognise its role in shaping culture" (Goldkind & Wolf, 2015:85). The relevance of social work is reinforced by Davis (2016), citing Frey and Osborne (2013) who predicted that social work will be one of the occupations that will be least prone to automation in the future. The key issues to examine now are the emerging modalities that social work can adopt to have greater impact in the Fourth Industrial Revolution.

E-SOCIAL WORK AS THE NEW MODALITY OF PRACTICE

Pelaez, Garcia and Masso (2018) described e-social work as comprised of online research, therapy (individual, group and community engagement), the teaching and training of social workers, and the

evaluation of social service programmes through the exclusive use of technology. E-social work is also further described as the relationship with service users that is mediated by electronic means. Coleman (2011) conducted a study on the experiences of social workers rendering services in a telephonic helpline service. One of the recommendations from this seminal study is that information and communication technology must be a prominent aspect of social work training in order "to signal the first steps toward a digitally literate social workforce that will be equipped for e-social work" (Coleman, 2011:259).

Parker-Oliver and Demiris (2006) also further expanded on the interface between technology and the social work profession by advocating that social work informatics should be regarded as a new scope of practice or specialty in social work. They define social work informatics as "a combination of computer science, information science and social work designed to assist in the management and processing of data, information and knowledge to social work practice" (Parker-Oliver & Demiris, 2006:129). They further propose that this specialty would entail three distinctive roles, namely researcher (evaluate the use of technologies), practice innovator (develop appropriate technologies), and educator/trainer (conduct training in emerging technologies). These roles would enhance the potential of technology to be used effectively in a social work context.

COVID-19 AND ITS IMPACT ON SOCIAL WORK PRACTICE

On 11 March 2020 the World Health Organization (WHO) declared that the novel corona virus has led to a global health pandemic (Cucinotta & Vanelli, 2020). This is a respiratory illness that is spread through the droplets expelled from the nose and mouth. The first reported cases of the virus known as Covid-19 occurred in December 2019 in Wuhan City, Hubei Province, China. By the end of September 2020 the WHO reported that 235 countries in the world had reported cases of Covid-19. By 26 January 2021 a total of 99,363,679 people globally had tested positive and approximately 2,135,959 persons had died from the virus. The first cases in South Africa were reported in March 2020. According to Molosankwe (2020), by the end of September 2020 the Minister of Health in South Africa reported that the country had 670 766 positive cases and 16 398 deaths. In November 2020 South Africa experienced a 'second wave' of the virus and by 26 January 2021 1,423,578 persons had tested positive for the virus and 41,797 deaths were recorded. Dwivedi, Hughes and Coombs (2020) stated that the pandemic created significant disruption in all societies across the world as governments had been imposing national lockdowns, social distancing regulations and the closure of workplaces, educational institutions and other key areas of human activity. In South Africa a national lockdown was imposed at the end of March 2020 and a National Disaster was declared by the President, Cyril Ramaphosa. The government-imposed lockdowns and social distancing regulations were aimed at curbing the spread of the virus to allow healthcare systems to place protocols in place to manage the pandemic. Dwivedi *et al.* (2020) reported that the Covid-19 pandemic had resulted in many organisations in society urgently rethinking their traditional operations and employing the use of digital technologies to maintain their operations. The "ever-quickening march to digitisation has become a sprint as a result of Covid 19" (Lee, 2020:3). The social work profession was also significantly impacted by the Covid-19 pandemic.

Sukuman and Abidin (2020) stated that the traditional form of face-to-face social work has been significantly impacted because of social distancing and lockdown regulations. Social workers had to use different digital technologies to render their services as the pandemic was not only a health crisis but also had psycho-social consequences. Sukuman and Abidin (2020) conducted a study on the use of digital technologies by social workers in Indonesia when the Covid-19 regulations were imposed in the country. The findings from the study indicated that the most common online services used by social workers were the social media application, WhatsApp (88%); SMS (Short Messaging Service 100%); mobile phone (100%) and telephone (76%). The least common digital services used were Zoom (38%) and Google Meet (33%). The study also found that the constraints experienced by the social workers in this study included limited access to the internet, poor wi-fi access, low ability and usage of digital services by clients. Amadasun (2020) reported that in Africa the Covid-19 pandemic is having a devastating impact

on the psychological and social wellbeing of communities. It also has the consequence of exacerbating human rights violations and thus social work will need to review their traditional social work practices.

Pelaez, Servos, De Mesa and Kalixto (2020) stated that digital social work (e-social work) provides an opportunity for social work to enhance the role of social workers in times of human disasters. This is especially important in the digitally-infused society of the Fourth Industrial Revolution. The South African Council for Social Service Professions (2020) issued a communique on 27 March 2020 that provided guidelines for social service practitioners in how to render their services during the Covid-19 pandemic and the national lockdown in South Africa. The communique notes that during the time of social distancing social service practitioners can engage with clients using telephonic counselling or social media applications such as WhatsApp and SMS. The SACSSP, however, further advised that in the use of technology-mediated interventions practitioners may require guidance and protection. Furthermore, they also need to adhere to professional ethics.

Berzin, Singer and Chan (2015), in describing a grand challenge for social work in harnessing digital technology for social good, noted on reviewing the literature on the impact of the digital era on social work that there was limited education and training for social work practitioners to develop more competence in the adoption of technology. They proposed that this limitation must be addressed and that schools of social work must form partnerships with university departments offering computer and information sciences to ensure transdisciplinary collaboration, which was envisaged as one of the key competencies for the 21st century. The transformation of social work training and practice will "create a new generation of social workers and a new breed of social work that fully harnesses technology for social good" (Berzin *et al.,* 2015:17). Current social work practitioners and social service organisations also have a crucial role in meeting this grand challenge for social work. O'Suilleabhain, Burns and McCaughren (2020) expressed the view that social work practitioners cannot concede the use of digital technology in social work settings to technology companies. Pelaez *et al.* (2018) also proposed that social work practitioners receive training in the use of new technologies and be involved in the design and development of these technologies that can further enhance the profession in meeting this grand challenge.

FOURTH INDUSTRIAL REVOLUTION AND ITS IMPACT ON SOCIAL WORK EDUCATION

Social work education fulfils a crucial role in preparing future practitioners in developing the required competencies to render effective and ethical social work services. Social work education refers to the process of acquiring a "full set of knowledge, competencies and abilities both human and technical" (Cabiati, 2017:61). McAuliffe (2019) noted that social work education changed rapidly from the 1990s with the emergence of online resources such as the internet. McAuliffe (2019) also noted that social work educators must learn new skills to engage students more effectively in the online educational environment that will ultimately result in social work graduates who are digitally proficient persons of influence and able to render social work services in a competent and ethical manner.

In July 2018 the International Federation of Social Workers (IFSW) and the International Association of Schools of Social Work (IASSW) adopted at its General Assembly in Dublin the Global Social Work Statement of Ethical Principles. It contains 9 ethical principles. The most significant inclusion was the 8th ethical statement which is entitled "Use of technology and social media". In 2020 the International Federation of Social Workers (Interim Education Committee) and the International Association of Schools of Social Work released the final draft document for the Global Standards for Social Work Education and Training. The document sets out the universal standards for social work education. The inclusion of these guidelines by the two most prominent global bodies for the social work profession is an acknowledgment by the global social work sector that digital technologies in the Fourth Industrial Revolution have implications for both the training and practice of social work. The specific guidelines are described as follows:

- *2.h Internet-based education should not fully substitute spaces for face-to-face instruction, practice learning and dialogue. Face-to-face spaces are critical for a well-rounded social work education and therefore irreplaceable* (IASSW & IFSW, 2020:10)
- *3.d Clear guidelines for ethical use of technology in practice, curriculum deliver, distance/blended learning, big data analysis and engagement with social media* (IASSW & IFSW, 2020:10)

Several examples document the ways that social work educators are adopting blended learning and teaching. Pack (2016) developed pre-recorded videos of social work practitioners sharing their experiences of managing child-protection cases. Student social workers would then view these to enhance their decision-making in a child-protection context. In a study by Tandy, Vernon and Lynch (2017), they used a virtual reality application called *Second Life* to teach social work students interviewing skills. The students who participated in the activity reported that it was a satisfying experience in enhancing their interviewing skills. Dodds, Heslop and Meredith (2018) conducted a study in which they introduced the use of simulation-based education in a social work programme at an American university. Simulation includes role-play; use of actors in a dramatised manner; and immersive virtual technology-based interventions. Dodds *et al.* (2018) employed the use of immersive technology-based simulation. The finding from their study indicated that immersive technologies enhanced students authentic learning experience and had the potential to aid their readiness for practice. Goldingay, Epstein and Taylor (2018) further employed the use of digital storytelling at an Australian university. The digital case study was called *Evelyn's Story.* It involved the production of a serialised diary account of a person who was released from prison and recorded her daily challenges of reintegrating into society. The study employed an evaluation study design and involved 29 Masters of Social Work students. The results from the study indicated that *Evelyn's Story* was more effective than reading a case study and it also enhanced authentic learning. "Online simulated client is an exciting area for social work to explore in the search for effective ways to prepare students for practice" (Goldingay, 2018:801) This research adds value to the important role that technology-mediated methods in teaching and learning can play in facilitating more effective social work education. Hitchcock, Smyth, Sage and Brady (2018) noted that social work educational programmes must develop social media policies for students and staff. It was also further recommended that the curriculum must educate students about the ethical use of social media within a strength-based perspective. Blakemore and Agillas (2020) observed that social work educators are increasingly using technology to enhance the curriculum. Blakemore and Agillas (2020) conclude that there is evidence of a *digital dualism*. This term refers to the belief that the online world and offline world are two distinct realms of human existence and thus a cautious approach is required from the social work profession in adopting new digital technologies.

FOURTH INDUSTRIAL REVOLUTION AND ITS IMPLICATIONS FOR SOCIAL WORK EDUCATION IN SOUTH AFRICA

In South Africa 16 Schools or Departments at universities offer social work education and training (Lombard, 2015). In these institutions social work educators have employed blended learning and teaching. This included the use of podcasts, vodcasts and e-portfolios as computer-mediated forms of assessment. YouTube and other web-based tools are also being used to enhance the learning experience. Pillay, Bozalek and Wood (2015) noted that the use of technology-enhanced learning by social work educators is evident, but that its adoption has been slow in South Africa. Pillay *et al.* (2015) conducted a study on the use of technology-enhanced learning and teaching methods by social work educators. The results from the study indicated that the use of technology-enhanced tools have the potential to positively influence social work students' authentic learning. Van De Heyde, Stoltenkamp and Siebrits (2017) reported on the use of an online self-coaching pilot programme for Social Work students at the University of the Western Cape in collaboration with a lecturer from the University of South Africa (UNISA). The results indicated benefits in the use of online coaching and mentoring.

In August 2019 the Association of South African Social Work Education Institutions (ASASWEI) hosted the ASASWEI Social Work Conference at the University of Cape Town. The theme of the conference *was* "Promoting Healthy Human Relationships". This was aligned with the fourth theme of the Global Agenda for Social Work (van Breda & Noyoo, 2019). The conference included oral and poster presentations by social work educators, researchers, students and practitioners from South Africa, Africa and countries such as Italy and the United States of America. The conference had 13 sub-themes, one of which was "Teaching in the Fourth Industrial Revolution". The inclusion of this theme was clear evidence that there was an acknowledgement in the South African social work landscape that the Fourth Industrial Revolution has implications for social work education and practice. A perusal of the conference programme indicated that 154 oral and poster presentations were delivered at the conference. A most startling observation was that only six presentations focused on the impact of digital technology on human relations. Three presentations focused on the negative impact of technology and how social workers need to respond to these new emerging social problems. Three of the presentations examined the use of digital technology in social work education. It was also noted that of these six presentations only two referred to the Fourth Industrial Revolution and its implications for social work education in South Africa. The use of blended learning in social work education is vital to "improve student engagements as we enter the fourth industrial revolution" (Zimba, 2019:60).

The studies and practices mentioned above certainly provide evidence that digital technology, as emerging in the Fourth Industrial Revolution, is receiving more attention and application within social work practice and education. The global Covid-19 pandemic accelerated the impact and adoption of e-social work. Sukuman and Abidin (2020) found in their study of social workers' use of technologies that social workers still require further skilling. They also recommended that social work education providers must teach information technology use as a compulsory subject in social work curricula. Lombard (2015) emphasised that in the South African social work context it is imperative that social workers must adopt a lifelong learning strategy to ensure that they remain informed about the latest developments confronting the profession. In response to the global Covid-19 pandemic social work practice had been adversely impacted globally in terms of its traditional direct social service delivery. Interim practice guidelines had to be developed to allow for e-social work practice. On the 15 April 2020 the South African Council for Social Service Professions (SACSSP) issued Notice 6 of 2020. This notice was issued to all registered social workers, social auxiliary workers, student social workers and student social auxiliary workers. The notice provided the interim guidelines that defined e-social work and set out the different aspects of e-social work practice. SACSSP (2020:1) acknowledged the value of e-social work, but also expressed the importance of using technology in an ethical manner. Section 3.1.3 (SACSSP, 2020:3) states the competencies that must be applied when practising e-social work. Section 3.1.3(e) states that social workers must undertake training to understand the use of the technologies and their diverse platforms. SACSSP (2020:3) noted in Section 3.1.3(h) that social work practitioners must attain 5 Continuous Development Points (CDP) in the field of e-social work and technology. These interim guidelines issued by the regulatory body for social service practitioners in South Africa (SACSSP) are a further confirmation of the impact of digital technology on traditional social work. They provide an opportunity to social work educational institutions and training providers to develop curriculum content that can meet the competency guidelines as set out by SACSSP. This point was also addressed by the Professional Board for Social Work (PBSW) when they issued a communication on 24 August 2020 that provided guidelines on how social work educational institutions can use digital technologies to ensure the completion of fieldwork hours of final-year B Social Work students at the 16 universities that offers social work training. According to Follentine (2020), chairperson of the PBSW, 40% of student's fieldwork hours could be attained by using simulated practice, which includes virtual counselling and rendering services at telephone helplines or text-based services as offered by Lifeline or universities' crisis lines.

It is evident from these regulatory guidelines that e-social work practice is considered as a legitimate practice modality within social work in the South African context. Social work education in South Africa

is at a crucial point in its development from its dominant colonial and Westernised influences. According to Mathebane and Sekudu (2018), the state of social work education in South Africa requires an urgent confrontation of its status and must engage in a process of decolonisation that will lead to an Afrocentric social work curriculum. Turton and Schmid (2020) also noted that students feel that the current curriculum does not reflect their lived experiences and that students also lack vital financial and technological resources to engage more meaningfully in the educational process.

The dominant discourse in social work education in South Africa is the decolonisation project. This complex project is now also provided with a further layer in terms of how e-social work can be incorporated into the decolonisation paradigm.

In the South African social work education landscape, the core curriculum for social work training is illustrated in Table 2. Table 2 also further identifies some of the potential e-social work content that need to be incorporated into the reimagined curriculum that accommodates both face-to-face social work and e-social work.

TABLE 2
SOCIAL WORK CURRICULUM

CORE SOCIAL WORK CURRICULUM	E-SOCIAL WORK CONTENT
Values, principles & ethics of social work	• E-tiquette ethics in the digital space. • Social media use by social workers. • Cybersecurity protocols when using e-social work services.
Micro, mezzo and macro social work	• Use of text-based assessments and interventions. • Use of audio and video-based assessments and interventions. • Use of gamification, virtual reality and augmented reality for assessments and interventions. • Addressing the digital divide and digital poverty. • Digital social activism and community work.
Fields of practice – can include family wellbeing; child and youth wellbeing; community wellbeing and mental health	• Impact of technology on family functioning. • Impact of technology on child and youth well being. • Emergence of technology mediated psycho-social problems such as cyber-bullying, sexting, gaming addiction. • Communities and digital poverty vs technology for social good – digital social innovation.
Social work research, policy and legislation	• The use of big data and the role of data science in social work research. • Social media policies for social work students and practitioners. • Legislation that governs the use of digital technology in South Africa.

In analysing the impact of the Fourth Industrial Revolution on South Africa, Hlatshwayo (2019) expressed the view that it allows capitalists greater control over the production process. Hlatshwayo (2019) also stated that in South Africa unreliable access to the internet and the high cost of data (cost of 1 gigabyte of data in 2018 was seven times more expensive than data in Egypt) will limit many South Africans in participating in the Fourth Industrial Revolution. An opposing view suggests that the Fourth Industrial Revolution "provides a unique opportunity for fast tracking decolonisation and development of states in Africa" (Onwughalu & Ojakorotu, 2020:76).

The implication for social work education in South Africa is not only to acknowledge the challenges of the Fourth Revolution Industrial as identified in this article, but also to take into account the opportunities that it is creating with emerging technologies. Social work education needs to review the current curriculum that has a strong face-to-face orientation and consider how to infuse e-social work. Goldkind and Wolf (2015) identified the internet of things, big data, gamification and mobile technologies as the disruptive technologies that will impact on social work.

The challenge is thus how to include these digital platforms in the social work curriculum. According to Goldkind and Wolf (2015) gamification applies game design elements to non-game contexts. It has the potential to offer social workers a novel tool in micro social work interventions. It can also be utilised in mezzo and macro social work practice. Mobile technologies are currently the most widely used digital tools in social work (Goldkind & Wolf, 2015) and can be used for online or text-based counselling. According to Onwughalu and Ojakorotu (2020), industrial revolutions can be described as radical deviations from traditional ways of goods production and service delivery. Social work practice and education are in the period where new and radical ways of doing and learning are being presented through the modality of e-social work. Social work educators are entrusted with the next generation of social workers who will be the primary workforce in the Fourth Industrial Revolution. The opportunity is now presented to re-imagine social work education in a way that can minimise the notion of digital dualism as social work clients have both an online presence and an offline presence (Lamendola, 2010).

CONCLUSION

This paper provided some insights into the emerging developments of the Fourth Industrial Revolution and its impact on the social work profession. The technological advances as witnessed in the Fourth Industrial Revolution have accelerated the emergence of e-social work. This was amplified during the global Covid-19 pandemic when social workers had to use online digital technologies to engage with client systems as face-to-face interventions were limited by the social distancing regulations introduced by governments throughout the world. The amendments to the regulatory ethical guidelines and the need for training in e-social work provide an ideal opportunity for social work education programmes in South Africa to review their curricula and thus produce social work practitioners that can competently operate in both the face-to-face and the online environment. The Social Work curriculum is currently under review in the decolonisation project. "Once social workers are attuned to the challenges in their societies, they could work towards offering transformed, relevant education" (Turton & Schmid, 2020:379). In the context of this paper, *relevant education* includes understanding and responding to the challenges and opportunities presented by the Fourth Industrial Revolution. Traditional social work programmes in South Africa should include curricula that focus on ethics, values and principles of the profession. In the context of e-social work, the way ethics are infused takes into account the use of technology. Social work programmes also contain content that capacitate students in the areas of assessment and intervention on the levels of micro, mezzo and macro levels of social work, including an online environment. Research is also an area of social work practice. Here the management of big data and the use of an array of digital research applications must also be accommodated in a social work curriculum to ensure its relevance and competent use in the digital age of the Fourth Industrial Revolution. It is thus important that social work education must harness the opportunity for curriculum renewal that prepares prospective practitioners to operate both in the online environment and offline environment. Client systems now occupy both these environments.

The president of South Africa certainly left the profession with little choice but to transform when he stated in his keynote address at the 4th Industrial Revolution SA Digital Economy Summit in Gauteng, South Africa on 5 July 2019:

> *What we know today about the potential beneficial impacts of the Fourth Industrial Revolution, we must embrace this historic confluence of human insights and engagement, artificial intelligence and technology, to rise to the challenges of poverty, unemployment and inequality.*

REFERENCES

ALROBAI, A., MCALANEY, J., PHALP, K. & ALI, R. 2016. **Online peer groups as a persuasive tool to combat digital addiction.** International Conference on Persuasive Technology. Salzburg.

AMADASUN, S. 2020. Covid-19 pandemic in Africa: What lessons for social work education and practice? **International Social Work,** 00(0):1-5.

BAKER, S., WARBURTON, J., HODGKIN, S. & PASCAL, J. 2018. The new informational paradigm: Developing practice-led approaches to the use of mobile ICT in social work. **British Journal of Social Work,** 48:1791-1809.

BALLANTYNE, N., WONG, Y-C. & MORGAN, G. 2017. Human services and the Fourth Industrial Revolution: From HusITa 1987 to HusITa 2016. **Journal of Human Technology in Human Services,** 35(1):1-7.

BERZIN, S., SINGER, J. & CHAN, C. 2015. **Practice innovation through technology in the digital age: A grand challenge for social work.** Cleveland OH: America Academy of Social Work and Social Welfare.

BLAKEMORE, T. & AGILLAS, K. 2020. Social media, empathy, and interpersonal skills: social work students' reflections in the digital era. **Social Work Education,** 39(2):200-213.

CABIATI, E. 2017. Social work education: The relational way**. Relational Social Work,** 1(1):61-79.

COLEMAN, N. 2011. **E-social work: A preliminary examination of social service contact centres.** Coventry: University of Warwick. (PhD thesis)

CUCINOTTA, D. & VANELLI, M. 2020. WHO declares Covid-19 a pandemic. **Acta biomedical: Atenei Paramenis,** 91(1):157-160.

DAVIS, N. 2016. **World Economic Forum. What is the Fourth Industrial Revolution?** [Online] Available: https://www.weforum.org/agenda/2016/01/what-is-the-fourth-industrial-revolution/ [Accessed 2/11/2020].

DIGITAL ECONOMY SUMMIT (2019). **4th Industrial Revolution, President Ramaphosa address**. Gauteng, South Africa. 5 July 2019.

DODDS, C., HESLOP, P. & MEREDITH, C. 2018. Using simulation-based education to help social work student prepare for practice. **Social Work Education,** 37(5):597-602.

DOMBO, E., KAYS, L. & WELLER, K. 2014. Clinical social work practice and technology: Personal, practical, regulatory and ethical considerations for the twenty first century. **Social Work in Health Care,** 53(2014):900-919.

DRESP, B. 2020. Internet addiction disorder**. Encyclopaedia Section Psychiatry and Mental Health Studies. Hal-02615330.**

DWIVEDI, Y., HUGHES, D. L. & COOMBS, C. 2020. Impact of Covid-19 pandemic on information management research and practice: Transforming education work and life. **International Journal of Information Management,** 55:102211.

FOLLENTINE, S. 2020. **PBSW Guidelines for meeting the challenges of the 4th year social work students completing their practical placements in a manner that complies with SACSSP registration requirements.** Pretoira: Professional Board of Social Work, South African Council for Social Service Professions.

Pretoria GERSHENVELD, N. & VASSEUR, J. 2014. As objects go online: The promise (and pitfalls) of the internet of things. **Foreign Affairs,** 93(2):60-67.

GEYER, S., LE ROUX, L. & HALL, H. 2019. A developmental social work perspective on problematic internet use among university students**. Southern African Journal of Social Work and Social Development,** 31(3):1-20.

GILLINGHAM, P. 2014. Electronic information systems and social work: Who are we designing for? **Practice: Social Work in Action,** 26(5):313-326.

GLEASON, N. 2018. **Higher education in the era of the Fourth Industrial Revolution.** Singapore: Palgrave Macmillan.

GOLDINGAY, S., EPSTEIN, S. & TAYLOR, D. 2018. Simulating social work practice online with digital storytelling: challenges and opportunities. **Social Work Education,** 37(1):790-803.

GOLDKIND, L. & WOLF, L. 2015. A digital environment approach: Four technologies that will disrupt social work practice. **Social Work,** 60(1): 85-87.

GRIFFIN, G. 2020. **Why social workers need data science.** [Online] Available: https://www.socialworker.com/feature-articles/technology-articles/why-social-workers-need-data-science/ [Accessed 24/08/2020].

HITCHCOCK, L., SMYTH, N., SAGE, M. & BRADY, S. 2018. **Technology in social work education: Educators' perspectives on the NASW technology standards for social work education and supervision**. Buffalo: State University of the New York Buffalo School of Social Work.

HLATSHWAYO, M. 2019. Debating the Fourth Industrial Revolution: First things first. **New Age,** 75(2019):26-29.

INTERNATIONAL FEDERATION OF SOCIAL WORKERS (IFSW) INTERIM EDUCATION COMMITTEE & INTERNATIONAL ASSOCIATION OF SCHOOLS OF SOCIAL WORK (IASSW). 2018. **Global Social Work Statement of Ethical Principles.** [Online] Available: https://www.ifsw.org/global-social-work-statement-of-ethical-principles/ [Accessed: 27/09/2018]

INTERNATIONAL FEDERATION OF SOCIAL WORKERS (IFSW) INTERIM EDUCATION COMMITTEE & INTERNATIONAL ASSOCIATION OF SCHOOLS OF SOCIAL WORK (IASSW). 2020. **Global Standards for Social Work Education and Training.**

KARABEGOVIC, I., TURMANIDZE, R., DASIC, P. 2020. Robotics and automation as a foundation of the Fourth Industrial Revolution - industry 4.0. In: TONKONOGYI, V. (ed.). **Advanced Manufacturing Processes. InterPartner 2019.** Lecture Notes in Mechanical Engineering. Springer, Cham.

LAMENDOLA, W. 2010. Social work and social presence in an online world. **Journal of Technology in Human Services,** 28(1):108-119.

LEE, T. B. 2020. Covid-19 makes it clearer than ever: Access to the internet should be a universal right. **The Guardian**, 4 June 2020.

LOMBARD, A. 2015. Internationalising of social work education: The South African experience. **The Indian Journal of Social Work,** 76(1):1-16.

MATHEBANE, M. & SEKUDU, J. 2018. Decolonising the curriculum that underpins social work education in South Africa. **Southern African Journal of Social Work and Social Development**, 30(1): 1-19.

MCAULIFFE, D. 2019. Challenges for the best practice in online social work education**. Australian Social Work,** 72(1):110-112.

MCCARTY, D. & CLANCY, C. 2002. Telehealth: Implications for social work practice**. Social Work**, 47(2):153-161.

MDEDZI, P. 2015. Introduction to Social Work in the South African context. In: SCHENCK, C. (ed.). **Introduction to Social Work in the South African context.** Cape Town: Oxford University Press.

MOLOSANKWE, B. 2020. Covid-19 in SA: Confirmed cases climb to 670 766; death toll at 16 398. **IOL**, 27 September, 2020.

MUKASANO, E. 2014. **An exploratory study of parents' experiences of their teenager's text messages.** Bellville: University of the Western Cape. (Master's thesis)

NKUNA, M. JORDAAN, M. & ZANGLE, P. 2020. A photovoice study on the perceptions among unemployed youth of information technology in Mamelodi, South Africa. **Social Work and Society International Online,** 18(1):1-14.

ONWUGHALU, V. & OJAKOROTU, V. 2020. The 4th Industrial Revolution: An opportunity to for Africa's "Decolonisation" and Development or Recolonisation? **African Renaissance,** 17(1):75-93.

O'SUILLEABHAIN, F., BURNS, K. & MCCAUGHREN, S. 2020. **Online Social Work Tools: Collaborative Educational Responses to remote-based social work practice.** 13th annual International Conference of Education, Research and Innovation ICERI2020 proceedings: 4744-4753.

PACK, M. 2016. Learning to 'think' on your feet: producing a new digital resource for teaching social work students about reflective decision-making in child protection in Australia. **Practice: Social Work in Action,** 28(3):213-226.

PARKER-OLIVER, D & DEMIRIS, G. 2006. Social work informatics: A new speciality. **Social Work,** 51(2):127-134.

PELAEZ, A., GARCIA, R. & MASSO, V. 2018. E-Social work: Building a new field of specialization in social work? **European Journal of Social Work,** 21(6):804-823.

PELAEZ, A., SERVOS, C., DE MESA, J. & KALIXTO, P. 2020. The more you know, the less you fear: Reflexive social work practices in times of Covid-19. **International Social Work**. 1-7.

PHILLIPS, C. 2017. The computer social worker: regulatory practices, regulated bodies, and science. **Qualitative Social Work,** 18(3):443-457.

PILLAY, R., BOZALEK, V. & WOOD, D. 2015. The use of Technology-Enhanced Learning (TEL) to facilitate authentic learning: experiences of South African social work educators. **Social Work/Maatskaplike Werk,** 51(1):515-532.

PRISECARU, P. 2016. Challenges of the Fourth Industrial Revolution. **Knowledge Horizons Economics,** 8(1):57-62.

REAMER, F. 2015. Clinical social work in a digital environment: Ethical and risk management challenges**. Clinical Social Work Journal**. 43:120-132.

RIFKIN, J. 2016. How the Third Industrial Revolution will create a green economy. **New Perspectives Quarterly,** 33(1):6-8.

ROESTENBURG, W. 2014. Ecometric and digital technologies within a management and supervision context. In: ENGELBRECHT, L. (ed.). **Management and supervision of social Workers: Issues and challenges within a social development paradigm.** Hampshire: Cengage Learning EMEA.

RYAN, D & GARRETT, M. 2018. Social work 'logged on': Contemporary dilemmas in an evolving 'techno-habitat.' **European Journal of Social Work,** 21(1):32-44.

SADIKU, M., OMOTSO, A., & MUSA, S. 2019. Social networking. **International Journal in Scientific Research and Development,** 3(3):126-128.

SALUBI, O., ONDARI-OKEMWA, E. & TIDINGS-OYEDARIN, S. 2018. Digital media usage and prevalence of Internet Addiction among undergraduate students in South Africa. **Digital technologies for information and knowledge management:** 233-239.

SCHWAB, K. 2016. **Fourth Industrial Revolution.** Geneva: World Economic Forum.

SHIN, D. & BIOCCA, F. 2017. Health experience model of personal informatics: The case of a quantified self. **Computers in Human Behaviour,** 69(2017):62-74.

SHOKI, W. 2019. **Demystifying the Fourth Industrial Revolution.** [Online] Available: https://africasacountry.com/2019/07/demystifying-the-fourth-industrial-revolution [Accessed 15/9/2020].

SOUTH AFRICAN COUNCIL FOR SOCIAL SERVICE PROFESSIONS (SACSSP). 2020. **General Notice 6 of 2020 15 April 2020: Interim guidelines on use of e-social work.** Pretoria: SACSSP.

SUKUMAN, O. & ABIDIN, Z. 2020. The role of social workers in social work practices by using information technology during the Covid-19 pandemic: Study in East Java Province, Indonesia. **International Journal of Advanced Science and Technology,** 29(8):1316-1325.

TANDY, C., VERNON, R., & LYNCH, D. 2017. Teaching note- teaching student interviewing competencies through Second Life**. Journal of Social Work Education,** 53(1):66-71.

TURTON, Y & SCHMID, J. 2020. Transforming social work: Contextualised social work education in South Africa. **Social Work/Maatskaplike Werk,** 56(4):367-382.

VAN BREDA, A. & NOYOO, N. 2019. **ASASWEI Social Work Conference: 27-29 August 2019. University of Cape Town Programme.** Cape Town: Association of South African Social Work Education Institutions.

VAN DE HEYDE, V., STOLTENKAMP, J. & SIEBRITS, A. 2017. Designing a social work online self-coaching program: Integrated support and joint ownership. **Cogent Education,** 4(2017):1-18.

VAN DEN BERG, C. 2017. **A framework for teaching digital business innovation skills to South African Information Systems students.** Bellville: University of the Western Cape. (PhD thesis)

WORLD HEALTH ORGANISATION. 2018. **Addictive behaviours: Gaming disorder.** [Online] Available: https://www.who.int/news-room/q-a-detail/addictive-behaviours-gaming-disorder [Accessed 02/03/2021].

WORLD HEALTH ORGANISATION. 2020. **Weekly epidemiological update 27 January 2021.** [Online] Available: https://www.who.int/publications/m/item/weekly-epidemiological-update---27-january-2021 [Accessed: 27/01/2021].

TWENGE, J. 2017. **Have smartphones destroyed a generation.** [Online] Available: https://www.theatlantic.com/magazine/archive/2017/09/has-the-smartphone-destroyed-a-generation/534198/ [Accessed: 02/03/2021].

XU, M., DAVID, M., & KIM, S. 2018. The Fourth Industrial Revolution: Opportunities and challenges. **International Journal of Financial Research,** 9(2): 90-95.

ZASTROW, C. 2016. **Empowerment series: Introduction to social work and social welfare: Empowering people.** Boston: Cengage Learning.

ZIMBA, Z. 2019. **Using blended learning in South African social work education to facilitate student engagement**. 29 August 2019. Association of South African Social Work Education Institutions Social Work Conference 2019. Cape Town: Association of South African Social Work Education Institutions: 60.

ZORN, I. & SEELMEYER, U. 2017. Inquiry-based learning about technologies in social work education. **Journal of Technology in Human Services,** 35(1):49-62.