

# NEED FOR POSTDIGITALIZATION IN (SOUTH) AFRICA: ROLE(S) OF EDUCATION LEADERS

Chinaza Uleanya

*University of Johannesburg, South Africa*

**Abstract:** *Considering the debate on preference between digitalization and postdigitalization, this study which is a concept note is undertaken. This is in attempt to explore the roles of education leaders if postdigitalization is to be preferred and promoted. Digitalization which is characterised by high technology use is regarded as tool for repair and solution to prevailing challenges such as inequality, unemployment, poverty, among others tends not to be experienced optimally as envisaged. Meanwhile, one of its major drivers remains the education sector. Conversely, the concept of Ubuntu which is used to express brotherhood remains a major phenomenon in the African continent. Thus, the need to consider postdigitalization as a remedy towards harnessing some of the benefits of digitalization together with those of Ubuntu. This is majorly because in postdigitalization more of the focus remains on humans which is the case with Ubuntu compared to digitalization which considers technology more than people.*

**Keywords:** *Digitalization, Education Leaders, Postdigitalization, Ubuntu.*

## Introduction

Digitalization tends to be in contrast with the philosophy of Ubuntu which is a major tenet in the African society and by extension is desired to be promoted in the rest of the world. This accounts for one of the drive for postdigitalization. Meanwhile, Haleem, Javaid, Qadri and Suman (Haleem et al., 2022: p. 275) report “One of the fundamental components of the United Nations’ sustainable development 2030 agenda is quality education. It aims to ensure inclusive and equitable quality education for all. Digital technologies have emerged as an essential tool to achieve this goal”. In congruence, Hersh (Hersh, 2020) reporting for the United Nations Educational, Cultural and Scientific Organization (UNESCO) in a background paper prepared for the 2020 Global Education Monitoring Report states that technology is a tool which aids inclusion. In support, Fernández-Batanero, Montenegro-Rueda, Fernández-Cerero and García-Martínez (Fernández-Batanero et al., 2022) following the findings from a systematic review state that technology helps to ensure inclusion of students living with disabilities. This is in congruence with the work of De Klerk and Palmer (De Klerk and Palmer, 2022) who hold the view that technology is crucial and useful for people living with disabilities in ensuring the success of Collaborative Online International Learning (COIL). However, Hersh (Hersh, 2020: p. 2, italics added for emphasis) states that:

*Differentiated learning supported by technology has considerable potential, but is rarely used, largely due to lack of appropriate teacher education and other resources. The lack of schools and other educational infrastructure and poverty raise particular challenges to the introduction of technology mediated*

*UCL in the low (and medium) income countries. However, the barriers worldwide are similar and include lack of funding and other resources, lack of available technologies and specialists and lack of teacher education.*

In the same vein, Sparks (Sparks, 2019: p. 1) had earlier posited that “Over time, technologies have developed, and the potential for technologies to promote and facilitate inclusive learning and educational equality has been realized ... introducing technologies is an opportunity to rethink teaching and learning practices”. This suggests the importance of the inclusion of technologies in teaching and learning practices. However, the work of (Uleanya, 2023) which used the South African context indicates the need for the reconceptualization of disabilities in the digital era due to the exclusion experienced by some students. Meanwhile, in the South Africa, digital technology is considered as a tool for repairs of the damages caused by the apartheid experiences and beyond (Government Gazette, 2020). This has brought about the use of digital technologies and inclusion of their practices in the education system. However, the question remains how well has inclusive and equitable quality education been made available through the use of digital technologies? In the same trend, considering the result of the study conducted by Fitzpatrick, Harvey, Cristini, Laurent, Lemelin and Garon-Carrier (Fitzpatrick et al., 2022), suggest the need for the reconsideration of digitalization in education. For instance, the study of Fitzpatrick et al (2022) employed a longitudinal approach to observe the effect of screen media use on children. The result showed that there were negative effects associated to children screen media use. Fitzpatrick et al (2022) submits that “higher levels of screen time intake were detrimental to the development of effortful control. These results suggest that screen media use, an exceedingly frequent activity, may play an enduring role in development by shaping young children’s temperaments”. By extension, this suggests partly the effect technology is capable of having on students. This is corroborated by Hoehe and Thibaut (Hoehe and Thibaut, 2020: p. 93) who state that “Technology use apparently affects brain functions, for example visual perception, language, and cognition”. The foregoing indicates that much emphasis and dependence on digitalization is capable of affecting humans, hence, postdigitalization should be preferred. Meanwhile, from another point of view, education leaders are considered to be majorly those saddled with the responsibility of ensuring the academic success of students (Best Colleges, 2022). Thus, for digitalization or postdigitalization to grow in any education system/sector, the roles of the education leaders are critical. Hence, the reason for this concept note which focuses on exploring and presenting the possible roles of education leaders in ensuring and promoting postdigitalization, using the case of South Africa. The study is guided by the research question: What are the roles of education leaders in the promotion of postdigitalization in South Africa? The remaining part of this concept note structured as follows: conceptualization of terms, discussion of findings, conclusions and recommendations, as well as limitations and suggestion for further study.

### **Conceptualization of Terms**

Education leader: This is often referred to as educational leadership (Best Colleges, 2022). According to AU School of Education (AU School of Education, 2023), it is called

teacher leadership. The major aim for such is to ensure academic success (Best Colleges, 2022). This is achieved through the improvement of material(s) and provision of training (Best Colleges, 2022). Review of the works of scholars such as Van Jaarsveld, Wolhuter and Van der Vyver (Van Jaarsveld et al., 2022), Wolhuter and Van der Walt (Wolhuter and Van der Walt, 2020) and Stewart (Stewart, 2008), an education leader performs the function of a teacher or educator in institution of learning. In the context of this study, education leader is used to refer to teachers and other education stakeholders who are saddled with the responsibility of enabling the learning abilities of students and ensuring academic success.

Postdigital era: This is a period which Macgilchrist (2021) while alluding to the works of scholars such as Jandrić et al. (Jandrić et al., 2018) and Cramer (2014) describes as an era where the digital is considered old and disruption seen as ordinary or mundane. A flashback at historic description of the term, postdigital otherwise described as being similar to undigital is used to mean a form of approach which concerns itself more with being human compared to being digital (Mann and Picard, 1995). In other words, postdigital focuses more on humans than technology. In this study, postdigital is used to mean a move from outright focus on and in favour of digital technology to humans.

Ubuntu: Lefa (Lefa, 2015: p. 4) states that “Ubuntu lies at the heart of the African way of life and impacts on every aspect of people’s well-being”. It is described as a collection of practices and standards of Africans which is targeted at seeing and appreciating people as real human beings (Mugumbate and Chereni, 2020). The practices and standards vary from one ethnic group to another, yet, the focus remains the same which is promoting an embodiment of people being seen and treated as human beings. This cuts across interpersonal relationships, communal and societal living, environmental and spiritual world (Mugumbate and Chereni, 2020). According to Van Norren (Van Norren, 2022: p. 2793) alluding to Van Norren (Van Norren, 2017) describes Ubuntu using the expression: “I am because we are (a person is a person through other persons)”. This helps to describe Ubuntu from the perspective of brotherhood. In the context of this study, Ubuntu is used to represent an embodiment of values, standards and practices which promotes humans as living beings over and above objects such as technological gadgets.

## Discussion of Findings

Sequel to the retrieved and analysed literature, certain themes were generated. The identified themes are presented and explained below using excerpts from literature where considered necessary and relevant.

### Theme 1: Digitalization - Solution to Prevailing Challenges

The findings from reviewed literature indicate that digitalization is presented as a phenomenon to be considered as the solution to different prevailing challenges caused by various circumstances. For instance, according to Paul (Paul, 2023), the future is digital. This implies that the need for digital technologies now and in the future is paramount.

Moreover, the United Nations (United Nations, 2022: p. 2, italics added for emphasis) states that "...digitalization is a crucial tool... And it has accelerated the transformation that was already well underway." In congruence, in the area of employment, digitalization is considered as a tool capable of preferring solution to issues of unemployment. Scholz and Kupke (Scholz and Kupke, 2014) reporting for The Organisation for Economic Cooperation and Development (OECD, 2020: p. 8, italics added for emphasis) Forum state that:

*The internet offers numerous possibilities, too. It can enable people to become part of the global value chain. Tasks that can be transmitted electronically can be done anywhere in the world. Young people, who are typically comfortable with new technologies, can offer their services to a much larger market. This may be particularly valuable in remote parts of the world.*

In support of this, the report of the OECD (2020) showed that advanced nations such as European countries benefit largely following access to good internet facilities. The OECD (OECD, 2020: p. 9) reports that:

*High level of connectivity enabled many businesses and households in the OECD to transition online after governments implemented national lockdowns to stem the initial spread of COVID-19. In France, for example, it allowed businesses to operate remotely following a national lockdown order in early 2020, and industries with the highest levels of teleworking were able to maintain business activity at 70% to 80% of normal levels.*

This shows that access to good internet connectivity is capable of enabling and promoting businesses and by extension reducing the rate of unemployment. However, the submission of Scholz and Kupke (2014) indicating that new technologies may be of huge value to remote areas of the world failed to take cognizance of the situation of African countries where remote areas are without technology and other useful facilities (Aruleba and Jere, 2022). Meanwhile, Adeniran (Adeniran, 2019) reporting for the World Bank Blog, had earlier stated that the lack of access to technology following digital exclusion in the continent is alarming and young people are in search for possible solution. Similarly, Olanrewaju, Adebayo, Omotosho and Olajide (Olanrewaju et al., 2021, p. 1) using Nigeria as case study alludes that "a lack of ICT strategies and policies..., socioeconomic status, poor internet connectivity, electricity, and a high poverty level as the primary drivers of digital gaps in remote communities". The foregoing suggests that the African continent and by extension other third world nations where technologies are lacking is prone to being affected and hindered by being assisted in overcoming prevailing challenges.

With regards to digitalization in governance, Kuldosheva (Kuldosheva, 2021: p. 3, italics added for emphasis) reports that

*"...e-government in developing countries emphasized the considerable positive impact of e-government, including enhanced state services provision, controlled corruption, and more transparent and inclusive governance". This implies that digitalization is considered as a tool for*

*promoting good governance. However, the question remains: how realistic and possible could such be in the African continent, especially considering the issue of access to internet connectivity?*

## **Theme 2: Digitalization vs Inequality**

Digitalization which ordinarily would have been considered as a leveller is a creator and contributor of inequality. For instance, reporting on this, Qureshi (Qureshi, 2023: p. 1, italics added for emphasis) states that “...income and wealth inequalities have risen as digitization has reshaped markets and the world of business and work. Inequalities have increased between firms and between workers. The distribution of both capital and labor income has become more unequal...”. In congruence, Yin and Choi (Yin and Choi, 2023: p. 61) posit that “The impact of digitalization on narrowing income gap has a greater effect on middle-income countries than on high-income countries”. The foregoing implies that while digitalization is envisaged to address the issue of inequality, in some instances and ways, it causes inequality. Thus, rather than bridging the digital divide, it expands the gap between the haves and have not. This is reflected in the report by the United Nations Conference on Trade and Development (UNCTAD, 2021: p. 6) which shows that “Only 20% of people in least developed countries (LDCs) use the internet, and when they do, it’s typically at relatively low download speeds and with a relatively high price tag attached”. “Also, the average mobile broadband speed is about three times higher in developed countries than in LDCs. And while up to eight out of 10 internet users shop online in several developed countries, only less than one out of 10 do so in many LDCs” (UNCTAD, 2021: p. 7). This report is suggestive of the fact that while the minority world which comprises western and developed nations are capable of experiencing and benefiting maximally from digitalization considering the level of access to facilities, African nations and by extension the majority world are prone to suffering from such. The (UNCTAD, 2019) therefore calls for a better global cooperation as the solution to resolving the issue of digital divide amongst nations in the majority world (the have not) and those of the minority world (the haves). However, the question remains, how well can the minority and the majority world cooperate especially for the support and help of the majority world?

## **Theme 3: Roles of Education Leaders in the Digitalization of Education**

Reviews of the works of different scholars show that education leaders play various roles consciously and unconsciously in promoting digitalization (Baydar, 2022), (Kowch, 2021), (Tiekam, 2019). Moreover, many institutions continue to seek various ways by which they can be digitally transformed (Tiekam, 2019). Thus, a scholar like Franklin (Franklin, 1992: p. 10) posits that “... technology has built the house in which we all live. The house is continually being extended and remodelled. More and more of human life takes place within its walls, so that today there is hardly any human activity that does not occur within this house”. This is based on the notion that students and teachers alike find it difficult and almost impossible to dissociate from the use of technological gadget. It is described as humans being enslaved by technology (Kali, 2022), (Illing, 2018), (Robbins, 2017). In order for technology contributes to the demand of education in the digitalization

era, Scholz and Kupke (2014) explain that there is need for education leaders to ensure that it teachers apply and embed it into their pedagogy. This is expected to aid good interactive learning experiences (Scholz and Kupke, 2014). The work of Fitzpatrick et al (2022) suggests that education leaders promote digitalization amongst children in various ways. Thus, the roles of education leaders in promoting postdigitalization is pivotal. Nababan et al (Nababan et al., 2021) highlights five (5) roles of education leaders in the digitalization of education as: being visionaries, designers, influencers, motivators and trendsetters. By visionaries, the opportunities and potentials embedded in the digitalization of education must be seen by education leaders regardless of the problems that may be associated with such. Being designers, education leaders are expected to be able to be an instructional leader in designing and implementing teaching and learning as it concerns the practices in the era. Also, as influencers, education leaders are expected to be able to engage and involve all relevant stakeholders such as teachers, education staff, students, parents in order for them “to jointly create dynamic education in accordance with the development of industry 4.0.” (Nababan et al 2021, p. 105). As motivators, education leaders are to be able to make provision for keen appreciation and support to teachers. Regarding being trendsetters, education leaders are considered as people who are capable of serving before their subordinates as role models with the use of new technologies. This is expected to help set the pace and motivate subordinates to act accordingly.

#### **Theme 4: Digitalization versus Ubuntu**

The finding of the work of Abubakre, Faik and Mkansi (Abubakre et al., 2021: p. 838) shows that “indigenous values can become entangled with the capabilities of digital technologies”. This, calls for caution while attempting to observe the practices of Ubuntu and ensuring digitalization at the same time. Moreover, digitalization seems not to thrive following the philosophy of Ubuntu (Uleanya, 2020). This is based on the notion that whilst Ubuntu tends to focus on humans and treat them as such (Mugumbate & Chereni, 2020), (Lefa, 2015), digitalization promotes and gives huge focus as well as preference to technologies and technological gadgets. Suffice to state that the philosophy of Ubuntu which focuses more on humans would advocate for postdigitalization. Thus, humans are to be prioritized above technology. In other words, humans are to be seen as manipulators and controllers and not slaves of technologies as is posited by Franklin (1992) to be the case in the digital era. Meanwhile Williams (Williams, 2018: p. 1, italics added for emphasis) reporting for Global Citizens submits that “Ubuntu is essentially about togetherness, and how all of our actions have an impact on others and on society. It is the common thread of the UN’s Global Goals...”. In essence, there is need to consistently trace the result of the actions carried out putting technologies to use. Moreover, according to Abubakre, Faik and Mkansi (2021), Ubuntu upholds the values of humility, benevolence and reciprocity which advocates for “doing to others as one would have them do to one”. Thus, in the digitalization era, the questions should be asked: What impact does the preference of technologies over human? How does such preference affect other humans and the society at large? Moreover, the finding of the work of Chakabwata (Chakabwata,

2022) suggests that where the philosophy of Ubuntu is taken into consideration, issues of inclusivity and social justice would have been duly addressed. In other words, with Ubuntu rightly in place in any education system and institution of learning, practices of social injustice will give way.

### **Theme 5: Roles of Education Leaders in the Postdigital Age**

Review of the work of Ball and Savin-Baden (Ball and Savin-Baden, 2022: p 758) suggests that in the postdigital era, one of the first things that can be done by education leaders is to first embrace and help their students to accept the “existence and importance of disjunction and enabling them”. Meanwhile, for Ball and Savin-Baden (2022: p. 754, italics added for emphasis) “postdigital describes a state of becoming where the human and the digital are interacting, co-creating, and merging in ways that are beyond imagining”. This indicates that humans are treated as priority, not slaves to technologies. From the work of Markauskaite, Carvalho and Fawns (Markauskaite et al., 2023) postdigital “requires going beyond functionalist views of teachers’ roles towards enabling their agentive engagement with a future-oriented, sustainable ... mission” (p. 181). This shows that the roles of education leaders are critical in helping students to acclimatise to the shift and the demand of the postdigital era. Moreover, from the findings of the work of Fitzpatrick et al (2022) it can be deduced that education leaders are capable of promoting postdigitalization amongst the children in their custody in one way or the other. Sequel to the foregoing, especially following the finding of the work of Ball and Savin-Baden (2022) which advocates for humans to be treated important rather than as slaves to technologies, education leaders have the prerogative of driving such. Thus, education leaders are expected to imbibe the Ubuntu theory while taking cognisance of the paramount roles of technologies.

### **Theme 6: Way Forward**

Review of the works of Nadkarni and Prügl (Nadkarni and Prügl, 2021) as well as Sia, Soh and Weill (Sia et al., 2016) suggests the need for changes in leadership education. This is envisaged to help bring about a re-orientation of education leaders in order to ensure alignment and relevance in the postdigital era. On the other hand, Ekholm (Ekholm, 2023) reporting for the World Economic Forum (WEF) highlights different points as way forward. Two among these are “bridging the digital divide” as well as “improved networks and coverage. In support, Olanrewaju et al (Olanrewaju et al., 2021, p. 1) had earlier advocated that “...addressing the digital gaps among students in remote parts ... will be crucial”. However, Scholz and Kupke (2014: p. 10, italics added for emphasis) report that:

*Technology means much more than closing the “digital divide” by equipping classrooms with computers and providing internet access. It is primarily about how well technology is applied and embedded into pedagogical concepts to enable interactive learning experiences. This implies that there is need to look beyond bridging the digital divide and equipping institutions of learning and classrooms with internet as is often the case but also focus on*

*infusing technology into the pedagogy to ensure collaborative teaching and learning experiences.*

Additionally, Olanrewaju et al (2021) alluding to the work of Aborode et al (Aborode et al., 2020) considers policy and allowing students access technological tools physically for digital skills literacy. Thus, Olanrewaju et al (2021, p. 8) states that “As a form of policy, the government can provide amenities such as internet-enabled community e-learning centres and equip them with computers that can ease physical access to technological tools and aid the acquisition of digital literacy skills”. Amidst the foregoing, the submission of Ball and Savin-Baden (2022) in which postdigital is considered humans interacting with technologies to co-create the desired outcomes at a time is paramount. Hence, education leaders are to be empowered and charged to ensure that technologies are not preferred and well treated above humans, thereby, making them slaves as the case is in the digitalization era.

## Conclusions

Ubuntu which is used to imply brotherhood is paramount and a major tenet in the postdigital era. Thus, while the digitalization era tends to focus more emphasis on technologies, thereby leading humans to being slaves to such, postdigitalization advocates for humans being treated fairly and made co-creators with technologies. In other words, humans are considered as being able to perform maximally using technologies, rather than allowing technologies to be seen as to be more desired above human. However, in the education sector, the preference for postdigital over digitalization era lies on the shoulder of education leaders being able to advocate for and promote postdigitalization. Based on the findings of this concept note, the following recommendations are made:

- Education leaders should be trained to understand and be able to differentiate the postdigital and the digital era. Also, they should be capacitated to identify ways of implementing practices of postdigitalization in their institutions of learning. This can be done through the organization of specific seminars, workshops and conference targeted for such purpose.
- Policies which promote postdigitalization should be made by the government and implemented in schools. This can be achieved through proper monitoring. Hence, the government can set-up monitoring teams to ensure that institutions of learning implement the policies and practices of postdigitalization.
- The students should be educated on the need for postdigitalization over digitalization. This can be done through periodic orientation programmes, seminars and workshops.



## Acknowledgements

The study is limited to a concept note, hence, only relevant literature were reviewed, analysed and presented. It is therefore suggested that a similar study be conducted using qualitative and/or quantitative or mixed method approach where data would be collected from participants. This would aid the retrieval of in-depth information on the subject and possibly, generalization of the results.

## References

- Aborode, A.; Anifowoshe, O.; Ifeoluwapo, A.T.; Rebecca, I.A.; & Oluwafemi, D.O. (2020).** Impact of COVID-19 on Education in Sub-Saharan Africa. Preprints.org, 2890, 1–29. doi: <https://doi.org/10.20944/preprints202007.0027.v1>
- Abubakre, M.; Faik, I.; & Mkansi, M. (2021).** Digital entrepreneurship and indigenous value systems: An Ubuntu perspective. *Information Systems Journal*, 31(6), 838-862. <https://doi.org/10.1111/isj.12343>
- Adeniran, D. (2019).** Africa's young people speak out about ending digital exclusion in their countries. <https://blogs.worldbank.org/youth-transforming-africa/africas-young-people-speak-out-about-ending-digital-exclusion> (last view: 28.04.2023)
- Aruleba, K.; & Jere, N. (2022).** Exploring digital transforming challenges in rural areas of South Africa through a systematic review of empirical studies. *Scientific African*, 16(e01190), 1-13, ISSN 2468-2276. doi: <https://doi.org/10.1016/j.sciaf.2022.e01190>
- AU School of Education. (11 January 2023).** Educational Leadership: Definition and Impact. <https://soeonline.american.edu/blog/educational-leadership/> (last view: 28.04.2023)
- Ball, J.; & Savin-Baden, M. (2022).** Postdigital Learning for a Changing Higher Education. *Postdigit Sci Educ.*, 4, 753–771. doi: <https://doi.org/10.1007/s42438-022-00307-2>
- Baydar, F. (2022).** The role of educational leaders in the development of students' technology use and digital citizenship. *Malaysian Online Journal of Educational Technology*, 10(1), 32-46. doi: <http://dx.doi.org/10.52380/mojet.2022.10.1.367>
- Best Colleges. (2022).** What is Education Leadership? <https://www.bestcollegesonline.org/faq/what-is-education-leadership/> (last view: 28.04.2023)
- Chakabwata, W. (2022).** "Ubuntu Philosophy and Online Assessment in Higher Education Institutions". In Keengwe, J. (ed) *Handbook of Research on Transformative and Innovative Pedagogies in Education*. IGI Global Publisher. doi: <https://doi.org/10.4018/978-1-7998-9561-9.ch014>
- De Klerk, E.D.; & Palmer, J.M. (2022).** Technology inclusion for students living with disabilities through collaborative online learning during and beyond a pandemic. *Perspectives in Education*, 40(1), 80-95. doi: <https://doi.org/10.18820/2519593X/pie.v40.i1.5>

- Ekholm, B. (13 January 2023).** 5 ways digitalization can help build global resilience in 2023. <https://www.weforum.org/agenda/2023/01/5-ways-digitalization-can-help-build-global-resilience-davos2023/> (last view: 28.04.2023)
- Fernández-Batanero, J.; Montenegro-Rueda, M.; Fernández-Cerero, J.; & García-Martínez, I. (2022).** Assistive technology for the inclusion of students with disabilities: a systematic review. *Educational Technology Research and Development*, 70, 1911–1930. doi: <https://doi.org/10.1007/s11423-022-10127-7>
- Fitzpatrick, C.; Harvey, E.; Cristini, E.; Laurent, A.; Lemelin, J.; & Garon-Carrier, G. (2022).** Is the Association Between Early Childhood Screen Media Use and Effortful Control Bidirectional? A Prospective Study During the COVID-19 Pandemic. *Frontiers in Psychology*, 13, ISSN: 1664-1078. doi: <https://doi.org/10.3389/fpsyg.2022.918834>
- Franklin, U.M. (1992).** *The Real World of Technology.* (CBC Massey lectures series.) Concord, ON: House of Anansi Press ISBN 0-88784-531-2
- Government Gazette. (2020).** Summary Report & Recommendations Presented by the Commission on the Fourth Industrial Revolution. Pretoria: Department of Communications and Digital Technologies. [https://www.gov.za/sites/default/files/gcis\\_document/202010/43834gen591.pdf](https://www.gov.za/sites/default/files/gcis_document/202010/43834gen591.pdf) (last view: 28.04.2023)
- Haleem, A.; Javaid, M.; Qadri, M.A.; & Suman, R. (2022).** Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers*, 3, 275-285. doi: <https://doi.org/10.1016/j.susoc.2022.05.004>
- Hersh, M. (2020).** Background paper prepared for the 2020 Global Education Monitoring Report: Inclusion and education. UNESCO. <https://unesdoc.unesco.org/ark:/48223/pf0000373655> (last view: 28.04.2023)
- Hoehe, M.R.; & Thibaut, F. (2020).** Going digital: how technology use may influence human brains and behavior. *Dialogues in clinical neuroscience*, 22(2), 93–97. doi: <https://doi.org/10.31887/DCNS.2020.22.2/mhoehe>
- Illing, S. (2018).** How we're becoming slaves to technology, explained by an MIT sociologist. *Vox*. <https://www.vox.com/science-and-health/2018/3/27/17085282/technology-facebook-social-media-sherry-turkle> (last view: 28.04.2023)
- Jandrić, P.; Knox, J.; Besley, T.; Ryberg, T.; Suoranta, J.; & Hayes, S. (2018).** Postdigital science and education. *Educational philosophy and theory*, 50(10), 893-899. doi: <https://doi.org/10.1080/00131857.2018.1454000>
- Kali, G. (2022).** How we became slaves to our own technology. *Mail and Guardian*. <https://mg.co.za/opinion/2022-04-18-how-we-became-slaves-to-our-own-technology/> (last view: 28.04.2023)
- Kowch, E. (2021).** "Leading Transformation with Digital Innovations in Schools and Universities: Beyond Adoption". In: Ifenthaler, D., Hofhues, S., Egloffstein, M., Helbig, C. (eds) *Digital Transformation of Learning Organizations*. Springer, Cham. pp 145–168. doi: [https://doi.org/10.1007/978-3-030-55878-9\\_9](https://doi.org/10.1007/978-3-030-55878-9_9)
- Kuldosheva, G. (2021).** Challenges and Opportunities of Digital Transformation in the Public Sector in Transition Economies: Examination of the Case of Uzbekistan. ADBI Working Paper 1248. Tokyo: Asian Development Bank Institute.

- <https://www.adb.org/publications/challenges-opportunities-digital-transformation-uzbekistan>  
(last view: 28.04.2023)
- Lefa, B. (2015).** The African Philosophy of Ubuntu in South African Education. *Studies in Philosophy and Education*, 1(1), 1-15
- Mann, S.; & Picard, R.W. (1995).** "On being 'undigital' with digital cameras: extending dynamic range by combining differently exposed pictures". In *Proceedings of Information Systems & Technology (IS&T)*, pages 442-448. [http://wearcam.org/is\\_t95\\_myversion.pdf](http://wearcam.org/is_t95_myversion.pdf) (last view: 28.04.2023)
- Markauskaite, L.; Carvalho, L.; & Fawns, T. (2023).** The role of teachers in a sustainable university: from digital competencies to postdigital capabilities. *Education Tech Research Dev.*, 71, 181–198. doi: <https://doi.org/10.1007/s11423-023-10199-z>
- Mugumbate, J.R.; & Chereni, A. (2020).** Editorial: Now, the theory of Ubuntu has its space in social work. *African Journal of Social Work*. 10 (1). eISSN: 2409-5605. <https://www.ajol.info/index.php/ajs/article/view/195112> (last view: 28.04.2023)
- Nababan, T.R.; Zainuddin, S.; Purba, S.; Batu, J.S.L.; Sianipar, G. (2021).** School Leadership Strategies in the Digital Era. *Proceedings of the 6th Annual International Seminar on Transformative Education and Educational Leadership (AISTEEL 2021)*. *Advances in Social Science, Education and Humanities Research*, 591, 103-106. doi: <https://doi.org/10.2991/assehr.k.211110.068>
- Nadkarni, S.; & Prügl, R. (2021).** Digital transformation: a review, synthesis and opportunities for future research. *Manag Rev Q*, 71, 233–341. doi: <https://doi.org/10.1007/s11301-020-00185-7>
- OECD (2020).** Digital Transformation in the Age of COVID-19: Building Resilience and Bridging Divides: Digital Economy Outlook 2020 Supplement. OECD: Paris, [www.oecd.org/digital/digital-economy-outlook-covid.pdf](http://www.oecd.org/digital/digital-economy-outlook-covid.pdf) (last view: 28.04.2023)
- Olanrewaju, G.S.; Adebayo, S.B.; Omotosho, A.Y.; & Olajide, C.F. (2021).** Left behind? The effects of digital gaps on e-learning in rural secondary schools and remote communities across Nigeria during the COVID19 pandemic. *International journal of educational research open*, 2, 100092. doi: <https://doi.org/10.1016/j.ijedro.2021.100092>
- Paul, S. (2023).** The Future Is Digital: Why Should Every Organization Embrace Digital Transformation? <https://www.cxotoday.com/cxo-bytes/the-future-is-digital-transformation/> (last view: 28.04.2023)
- Qureshi, Z. (2023).** Inequality in the Digital Era. <https://www.bbvaopenmind.com/en/articles/inequality-in-the-digital-era/> (last view: 28.04.2023)
- Robbins, J. (29 June 2017).** We Are Becoming Enslaved by Our Technology – Ruminations on the IQ2 Debate. *Technology and Society*. <https://technologyandsociety.org/ruminations-on-the-ig2-debate-we-are-becoming-enslaved-by-our-technology/> (last view: 28.04.2023)
- Scholz, W.M.; & Kupke, K. (2014).** Cutting youth unemployment in a digital age. <https://www.oecd.org/forum/oecdyearbook/cutting-youth-unemployment-in-a-digital-age.htm> (last view: 28.04.2023)

- Sia, S.K.; Soh, C.; & Weill, P. (2016).** How DBS bank pursued a digital business strategy. *MIS Q Exec*, 15(2), 105–121. <https://www.semanticscholar.org/paper/How-DBS-Bank-Pursued-a-Digital-Business-Strategy-Kien-Soh/a0febd498e11df7e7d4e213a03fbcc81d8972b4b> (last view: 28.04.2023)
- Sparks, H. (2019).** “Digital Technology and Inclusive Learning”. In: Peters, M., Heraud, R. (eds) *Encyclopedia of Educational Innovation*. Springer, Singapore. pp. 1-6. doi: [https://doi.org/10.1007/978-981-13-2262-4\\_136-1](https://doi.org/10.1007/978-981-13-2262-4_136-1)
- Stewart, E.B. (2008).** School structural characteristics, student effort, peer associations and parental involvement: the influence of school and individual level factors on academic achievement. *Education and Urban Society*, 40(2), 179–204. doi: <https://doi.org/10.1177/0013124507304167>
- Tiekam, A. (2019).** Digital Leadership Skills that South African Leaders need for Successful Digital Transformation. Gordon Institute of Business Science, University of Pretoria, South Africa. <http://hdl.handle.net/2263/74033> (last view: 28.04.2023)
- Uleanya, C. (2020).** Ubuntu in the Fourth Industrial Revolution (4IR) and the African Society. *African Renaissance (AR)*, 17(3), 33-45. doi: <https://hdl.handle.net/10520/EJC-1fe09bc59c> (last view: 28.04.2023)
- Uleanya, C. (2023).** Reconceptualising Disabilities and Inclusivity for the Postdigital Era: Recommendations to Educational Leaders. *Educ. Sci.*, 13, 51. doi: <https://doi.org/10.3390/educsci13010051>
- United Nations. (2022).** Can digitalization improve the well-being of nations? <https://unric.org/en/can-digitalization-improve-the-well-being-of-nations/> (last view: 28.04.2023)
- United Nations Conference on Trade and Development (UNCTAD) (4 September 2019).** ‘Digital divide’ will worsen inequalities, without better global cooperation. <https://news.un.org/en/story/2019/09/1045572> (last view: 28.04.2023)
- United Nations Conference on Trade and Development (UNCTAD) (29 September 2021).** Inequalities threaten wider divide as digital economy data flows surge. UNCTAD. <https://unctad.org/news/inequalities-threaten-wider-divide-digital-economy-data-flows-surge> (last view: 28.04.2023)
- Van Jaarsveld, L.; Wolhuter, C.C.; & Van der Vyver, C.P. (eds.) (2022).** *Education leadership: Scoping, perspectives and future trajectory*. AOSIS Books, Cape Town. doi: <https://doi.org/10.4102/aosis.2022.BK383.00>
- Van Norren, D.E. (2017).** *Development as Service: A Happiness, Ubuntu and Buen Vivir Interdisciplinary View of the Sustainable Development Goals*. Doctoral diss., Tilburg University. [https://pure.uvt.nl/ws/portalfiles/portal/19859816/Van\\_Norren\\_Development\\_18\\_12\\_2017.pdf](https://pure.uvt.nl/ws/portalfiles/portal/19859816/Van_Norren_Development_18_12_2017.pdf) (last view: 28.04.2023)
- Van Norren, D.E. (2022).** African Ubuntu and Sustainable Development Goals: seeking human mutual relations and service in development. *Third World Quarterly*, 43(12), 2791- 2810. doi: <https://doi.org/10.1080/01436597.2022.2109458>

- Williams, H.S. (19 October 2018).** What Is the Spirit of Ubuntu? How Can We Have It in Our Lives? <https://www.globalcitizen.org/en/content/ubuntu-south-africa-together-nelson-mandela/> (last view: 28.04.2023)
- Wolhuter, C.C.; & Van der Walt, H. (2020).** Indiscipline in South African schools: the parental/community perspective. *Koers*, 85(1), 1–11. doi: <https://doi.org/10.19108/KOERS.85.1.2436>
- Yin, Z.H.; & Choi, C.H. (2023)** Does digitalization contribute to lesser income inequality? Evidence from G20 countries. *Information Technology for Development*, 29(1), 61-82. doi: <https://doi.org/10.1080/02681102.2022.2123443>

---

**Chinaza Uleanya**

University of Johannesburg, Johannesburg, South Africa

ORCID  <https://orcid.org/0000-0002-7732-0905>

chinazau@uj.ac.za

AUTHOR'S DATA WERE PUBLISHED ACCORDING GDPR RULES AND PUBLICATION ETHICS OF THE JOURNAL (<http://www.math.bas.bg/vt/kin/>)

Received: 22 May 2023

Accepted: 15 June 2023

Published: 30 June 2023

DOI: <https://doi.org/10.55630/KINJ.2023.090101>

# KIN Journal, 2023, Volume 09, Issue 1

*Science Series Cultural and Historical Heritage: Preservation, Presentation, Digitalization*

*Научна поредица Културно-историческо наследство: опазване, представяне, дигитализация*

*Научная серия Культурное и историческое наследие: сохранение, презентация, оцифровка*

## **Editors**

*Prof. PhD. Petko St. Petkov*

*Prof. PhD. Galina Bogdanova*

## **Редактори/съставители**

*проф. д-р Петко Ст. Петков*

*проф. д-р Галина Богданова*

## **Copy editors**

*Assist. prof. PhD. Nikolay Noev*

*Assist. prof. PhD. Kalina Sotirova-Valkova*

*PhD. Paskal Piperkov*

## **Технически редактори**

*гл. ас. д-р Николай Ноев*

*ас. д-р Калина Сотирова-Вълкова*

*д-р Паскал Пиперков*

**© Editors, Authors of Papers, 2023**

**© Редколегия, Авторски колектив, 2023**

## **Published by**

*Institute of Mathematics and Informatics*

*at the Bulgarian Academy of Sciences,*

*Sofia, Bulgaria*

## **Издание на**

*Институт по математика и*

*информатика при Българска академия на*

*науките, София, България*

<http://www.math.bas.bg/vt/kin/>

**ISSN: 2367-8038**