Humanizing Pedagogy: The Human-Centric Approach to Technology Integration for Teacher Training

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Abstract

The rapid expansion of Information and Communication Technologies (ICTs) in education has the potential to revolutionise higher educational opportunities and promote social development for students through techno-equipped teacher educators. However, despite this intensive growth, for Sub-Saharan Africa, a substantial gap still exists between the widespread use of ICTs and their effective implementation in education. In this theoretical paper, we examine the challenges and consequences embedded in this gap in higher education, through the lens of humanising pedagogy, with a focus on the potential harm to the students' social development. The study however makes some crucial recommendations on policy and practice through an exploration of strategies and propositions for bridging this divide to utilise the full educational potential of ICTs in the African higher education context. We argue for the adoption of humanising pedagogy in higher education for better contribution towards economic and social development through education. We conclude by presenting a suggested model, which we termed 'Human-centric ICT integration Model' for effective integration of the said ICTs in a humanistic approach for preservice teacher training.

Keywords: *Humanising pedagogy; digital gap; digital challenges; digital consequences; digital pedagogy.*

Introduction

Nearly all higher education students have experience of some type of hybrid, remote, and in-person learning due to Covid-19. Technology has made life easier in all areas, including education. It offers quick, effective searching, information publication, data analysis, storage and transfer, as well as a variety of additional pedagogical purposes for the classroom (Barnová & Krásna, 2018). According to literature, if this rapid advancement is not used wisely and meaningfully, there is a major risk that machines could eventually rule the world (Bykov & Leshchenko, 2016; Barnová & Krásna, 2018; Alasadi & Baiz, 2023). The notable gap in widespread use and effective application of ICTs is making the realisation of its full potential uneven sometimes for learners in the same educational institute. Scholars are calling for responsible use of technology in education, that is ethical (Alasadi & Baiz, 2023) and both socially and emotionallyinclusive (Gravetti, 2022). One wonders about the potential for responsible, ethical, considerate, inclusive integration given the research findings from the generality of African countries reporting efficacy and competence challenges among educators (Yende, 2021; Masenya, 2021; Nazir, 2023; Kanyane, 2023; Ndume et al., 2021; Tarusikirwa, 2022).

Recently scholars have turned research focus on how the 21st Century student learns, for evidence on which to base effective ICT integration strategies. These are called Generation Z, Digital Natives, Facebook Generation etc., taught mostly by generation X educators, those born before computers (Wang et al., 2013; Kivunja, 2014; Rothman, 2016; Cilliers, 2017; Elaoufy, 2023). The reason is to mitigate the problems arising from the indiscriminate use of technologies in the classroom without inculcating them as part of a holistic educational experience where ICTs are the means towards set pedagogical goals instead of the end (Cilliers, 2017; Elaoufy, 2023). For sub-Saharan Africa, this is highly prevalent as universities require that educators use provided ICTs for teaching and learning and in most cases without prior training, resulting in haphazard and/or insufficient use of the tools (Bykov & Leshchenko, 2016; Masenya, 2021; Kanyane, 2023). These are indicators of a gap that needs urgent attention, of equipping educators with the correct ICT skills for pedagogical purposes.

Generation Z and Generation X

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It is important to first of all understand who generation Z are before we can appreciate the disconnect that exists between them and their teachers especially preservice teachers and their teacher educators in higher education. According to Barnová & Krásna, (2018), generation Z are those born after 1995, also referred to as digital natives, virtual generation, iGems, Google Generation, Post-Millennials, Rainbow Generation etc. These are the learners found in higher education today and also as young employees on the labour market. They were born and grew up in the digital age and cannot imagine a world without internet (Rodríguez et al., 2020; Barnwell, 2016). On the other hand, the majority of teacher educators in higher education are often those who saw the emergence of ICTs and their gradual integration into pedagogy and became immigrants into their use (Elaoufy, 2023). The generation Z are highly skilled intuitive users of modern technologies while digital immigrants, also known as Generation X, can be generally skilled but cannot achieve generation Z levels (Wang et al., 2013). The difference in ICT understanding between the two stems from this underlying gap in exposure and experience.

Pedagogical *Paradigms* and *Technological Proficiency*

Inherent Aptitude

Generation Z students are characterized by possession of an inherent aptitude in navigating different digital platforms or technologies which lends them a unique advantage in utilizing technology for learning. Gibson (2016) posits that studies are showing that continual exposure to the screen has changed the neural circuitry of generation Z developing resulting in shorter attention span, inhibited social skills and heightened multitasking ability. This is in direct opposite to generation X educators. These were trained in traditional pedagogical methods, and as such may face challenges in adapting to generation Z rapid pace in techno-change and consumption (Cilliers, 2017). They might be more comfortable with conventional teaching techniques and literature is fraught with evidence that many teacher educators are not fully harnessing the potentials of ICTs (Fernández-Cruz & Fernández Díaz, 2016; Barnová & Krásna, 2018).

Learning Styles and Preferences

Generation Z speak a technology language, prefer active and experiential learning and thrive in learning environments that are collaborative, hands-on and problem-solving inclined. According to Rhothman (2016), auditory learning is strongly disliked by this generation and these are lecture methods and the discussions. Rhothman (2016, n.p.) went on to explain that, "The brains of Generation Zs have become wired to sophisticated, complex visual imagery, and as a result, the part of the brain responsible for visual ability is far more developed, making visual forms of learning more effective" On contrary, many teacher educators were educated in the lecture-centric model and extensively use the model with their learners (Cilliers, 2017). The very classrooms or lecture halls in higher education, were not designed for the Z generation but for the X generation (Cronje, 2020). Such settings, with the aforementioned very short concentration spans, combined by a hatred for auditory learning, results in anything but effective learning. In the context of load-shedding and poorly ICT resourced rural university campuses, it compounds the burden of teacher educators to interest their learners in mastering content and modelling some ICT integration (Moonasamy & Naidoo, 2022).

Instant Gratification – Delayed Rewards

The digital age has influenced the Generation Z in such a way that they have become accustomed to swift information access and instant gratification (Olga et al., 2022). They have no patience generally to wait for feedback that comes after a whole week as is the case with manually corrected quizzes and assessments (Rhothman, 2016). It is important to note that Generation Z learn better when they are multitasking through a constantly changing activity mode as they use ICT for entertainment and study mostly simultaneously (Olga et al., 2022). More often than not, teacher educators tend to choose traditional methods of assessment over games-based revision and online activities which come with protracted lengths of feedback reports (Kivunja, 2014). Thus, effective pedagogy for teacher educators in this context entails that they must find a workable balance between immediate feedback contrivances like online peer evaluations, assessment games or quizzes and traditional evaluation modes (Cilliers, 2017).

Digital Divide and Access to Resources

The digital divide among teacher educators and their learners is real and is a significant factor contributing to the existent disparity in pedagogical environments (Wang et al., 2013). Generation Z learners have developed the skill to navigate cutting edge technology and many a time own them (Rodríguez et al., 2020; Barnwell, 2016). Their lives revolve around online networks which in turn dictate what they do. In essence, technology gives them values, they write in abbreviations and emojies, a language different from that of their teachers (Barnwell, 2016). However, their technological prowess is not for pedagogical integration and this is where they need training and modelling opportunities (Falloon, 2020). Conversly, Generation X hail from a socio-economic background bereft of advanced digital technological resources, formatively impacting negatively on their access and use of digital technologies in general (Alasadi & Baiz, 2023).

Attitudes Towards Technology

For Generation Z technology is fundamental to daily life. In virtual learning situations they seamlessly integrate technology to share knowledge within various aspects of their personal and academic endeavours. This results in achieving e-readiness for self-directed remote learning and skills for virtual pedagogy (Kivunja, 2014; Mujib & Marhamah, 2020; Moonasamy & Naidoo, 2022). Students perceive technology more as communication and self-expression tools. On the contrary, immigrants, may recognize the importance of technology for pedagogy but lack requisite experience, efficacy and confidence in its use. The resultant scenario is the present assumed negative attitude of teacher educators against technology (Elaoufy, 2023). Training in the proper use of ICTs for educational purposes is important in the achievement of efficacy and confidence for teaching and learning.

In this paper we attempt to answer two research questions; what are the challenges of insufficient implementation of ICTs on learners and how can the concepts of humanising pedagogy be conceptualized to address these challenges?

Theoretical Framework

The theory is Humanising pedagogy. Humanising pedagogy originates from critical pedagogy, an education theory by Paulo Freire in the 20th century (Freire, 1970). His philosophy placed emphasis on the human aspects of education, where the unique needs and experiences of individual learners are acknowledged instead of a manipulation by teachers and by the education system. According to Horton & Freire (1990) a humanising pedagogy's focus is building relationships of trust, academic rigor, power sharing and respect between teachers and students. Teacher educators who adopt humanising pedagogy value students' backgrounds, experiences, culture, language and also their historical perspectives (Macedo & Bartolomé, 2000; Huerta, 2011).

The theory of Humanising pedagogy is defined as the magnitude of commitment by stakeholders to do away with dehumanizing pedagogy that perpetuates enshacklement and socio-economic underdevelopment (Sihlangule, 2022), evolving a curriculum that contextualizes societal needs (Freire, 1970). Given South Africa's apartheid history of dehumanization through education, (Letsekha, 2013), there arises the need for a curriculum that decolonises Eurocentrism especially (Govender & Naidoo, 2023). Alasadi & Baiz (2023) state that scholars are calling for humanising pedagogy for effective knowledge acquisition (Kajee, 2021). This call comes due to the perceived harmful substantial gap in existence between the extensive use of ICTs and their effective implementation in education (Alasadi & Baiz, 2023). Humanising pedagogy seeks agency that promote a sense of belonging, owning learnt knowledge and being empowered by it (Sengupta, et al., 2020).

In the broader concepts within this theory, we chose to focus our discussion on the concepts of personalized learning, collaborative learning, social and emotional learning, mindful use of technology and teacher – student relationships. Personalised learning is matching what is taught, how it is taught with the needs of each individual learner (UNESCO, 2012). Collaborative learning is when two or more people attempt to learn something together, in this case with the integration of technology (Hernández-Sellés, et al., 2020). Katzman &Stanton (2020) explain social and emotional learning as a curriculum that helps learners in developing self-awareness, empathy and social skills within ICT collaborated learning environments. The mindful use of technology incorporates all the other foregoing tenants to make technology integrated learning productive of holistic beings who are knowledgeable and still hold the

acceptable values of society which has become global (UNESCO, 2012). Thus, humanising pedagogy is learner centred and offers strategies to mend the gap of cognitive overload and shallow learning.

Implications of Insufficient Implementation of ICT in Education

Scholars have become worried with what they term Technocentrism and pedagogical disconnect in education. This is a way of looking at and implementing technology separated from its social and cultural context (Suoranta, et al., 2022; Fawns, 2022; Ross & Alsayegh, 2023). This is viewed as a lack in aligning ICT when integrated for the classroom, whether virtually, hybrid or face-to-face. ICT is seen as a panacea for a broken education system, is applied wholesale and overemphasised at the expense of effective pedagogical methodologies (Fawns, 2022). Integration takes the form of learning about the technology as opposed to learning through it (Ross & Alsayegh, 2023). Differing personalities of teacher educators and their responses to ICT integration tend to widen the digital divide in the form of unequal access and opportunities to learn for students even in the same institute (Jita & Sintema, 2022).

Social Ramifications of Inadequate ICT Implementation

The purpose of integration of ICT for the classroom is a didactical approach that focuses on drawing students to the educational content and not to the technological tools, which in the hands of a skilled teacher, act as a vehicle towards an intended goal of fluid content delivery and mastery (Barnová & Krásna, 2018). Meaning, when ICT in education is not used as a means to an end, then there are consequences that result from it and one of them is social. According to Harlick & Halleran, (2015), Random use of technology for pedagogy make them an obstacle in goal achievement due to decreased quality of the pedagogical process. Berger & Thomas (2011), see this way of application as a threat to the holistic development of children and youth. Both these demographic cohorts are directly impacted by the teacher educator's pedagogical activities through teacher training.

The call to equip teacher educators with proper integration skills is so that they can implement and model ICTs across their preservice teacher training curriculum. The potential for technology in education can only be realised when teacher educators become aware of the wider effects of technology on the society and on the individual students (Janssen, et al, 2013; Falloon, 2020). While ICT has immense potential for education, haphazard and inadequate use generally hinder some aspects of social growth among learners both for higher education and for schools (Falloon, 2020). Teacher educators must be thoughtful and contextually sensitive when choosing and modelling ICT use for preservice teachers for there is potential harm to students' social development (Foulger et al. 2017; Lockee, 2012; Coursera, 2023).

Social Development Theories

The sociocultural theory emphasises the importance of social interaction for cognitive development and holds that learners build knowledge through interaction with adults and peers who are more experienced (Main, 2023). The theory emphasises the importance of culture and society in the holistic development of individuals. Vasileva & Balyasnikova (2019), explain Vygotsky's theory as stating that cognition, learning and socio-cultural functions of a human being are shaped and developed by friends, parents and others in the society. Teacher educators need to understand that bombardment with ICTs in the learning spaces tend to limit the role of these significant others which results in anti-social behaviours prevalent in society today as value systems are eroded (Main, 2023). As students become immersed in online environments as a result of poorly implemented ICT in education, there may be a decline in real-world social interactions (Munoz et al., 2021). Thus, teacher educators must be skilled enough to simulate these significant others in ICT integrated teaching and learning processes.

Increased Screen Time

The significant increase in student screen time is indicative of poorly implemented integrated learning. Numerous problems, including decreased physical activity, disturbed sleep, and digital eye strain, have been linked to excessive screen time (Russell, 2021). Due to fewer opportunities for face-to-face interaction, the effect is a negative impact on students' social lives (Madigan, 2019). The over-use of technology increases digital communication to the detriment of non-verbal cues and expressions which are crucial to social development (Madigan, 2019; Russell, 2021). Reduced face-to-face interactions may also impede skills in interpersonal relationships, such as skills in establishing and maintaining meaningful relationships. The

results of such is the current sudden hike in divorce and juvenile suicide cases (Phillipson, c. 1997; Gibney et al., 2013; Muppalla et al., 2023; Russell, 2021). Additionally, students may experience social isolation and emotional distress as a result of the prevalence of cyberbullying and online harassments associated with digital spaces (Coursera, 2023).

Digital Literacy and Critical Thinking

Even though ICT is a necessary skill for the twenty-first century, an excessive reliance on technology in the classroom can impede the growth of critical thinking abilities (Brynat et al., 2020). When information is made easily accessible to students through ICT, they might be less likely to critically question, analyse, and synthesize information (Smith, 2022). Their capability to participate in meaningful and beneficial social discourse may be adversely affected. Critical thinking skills is what ICT should develop when properly integrated which produces the opposite when haphazardly implemented (Brynat et al., 2020).

Cognitive Overload and Superficial Learning

Ineffectual integration of ICT for teaching and learning has engendered noticeable consequences, among them, cognitive overload and superficial learning. This phenomenon results from the incongruity existent between the complexity of presented information and the cognitive ability of learners (Skulmowski & Man Xu, 2021). ICT for pedagogy must be applied judiciously to facilitate personalized and adaptive learning experiences or learners will be inundated with a superfluity of information (Kalyuga, 2009). The results is cognitive overload due to information exceeding their processing capacities causing a chain reaction of diminished comprehension and retention as students become compelled to focus their cognitive abilities for managing information volumes rather than engaging them in critical analysis or synthesis (Paterson, 2019).

The affordance of technology if not properly utilised for immersive learning experiences, may have encourage recourse to rote memorisation and other rudimentary strategies of retention (Timotheou et al, 2023). Problem-solving, analytical thinking and creative application of knowledge are not cultivated by insufficient application of ICT in pedagogy, but rather, the opposite, thus cognitive overload and superficial learning (Australian Education Research Organization, 2023). An unfavourable cycle is set in motion by the inadequate integration of ICT in education. Cognitive Overload and Superficial Learning obstruct learners' holistic development, making it difficult for them to understand complicated ideas and to develop the critical thinking abilities necessary for lifelong learning and flexibility (Fiorella & Mayer, 2016).

Diminished Interpersonal Skills and Social Interaction

A worrying outcome of unrestrained ICT integration in learning environments is the deterioration of social skills among students (Okita, 2012). In the past, school was a venue for the development of critical social competencies including conflict resolution, cooperation, and communication in addition to the transmission of knowledge (Vasileva & Balyasnikova, 2019). When ICT is not fully exploited, opportunities for inter-personal communication are reduced, resulting in gradual loss of these critical skills. According to Venter (2019), too much reliance on remote learning tend to hamper the development of complex social cues, empathy, and the capacity to decipher nonverbal cues which are essential components of successful interpersonal relationships. Reduced social engagement is detrimental to collaboration and the development of cultural perspectives that are realized by meaningful interactions with peers. Consequently, heedless use of ICT might unintentionally lead to a deficiency in the very social skills that are essential for success for academics (Alsadoon, 2018; Munoz et al., 2021).

Humanising Pedagogy for ICT Sufficiency in Education

The 21st century educator must be able to adopt humanising pedagogy with students understanding that humanistic and technological components of the educational process are related by pedagogy (Katzman &Stanton, 2020). We suggest a model which we call the human-centric approach to ICT Model. The model proposes a balanced approach where technology augments rather than hinder educational experiences and learner social development. Given the dynamic emergence of technology, regular assessments and adjustments become crucial for maintaining the model's effectiveness
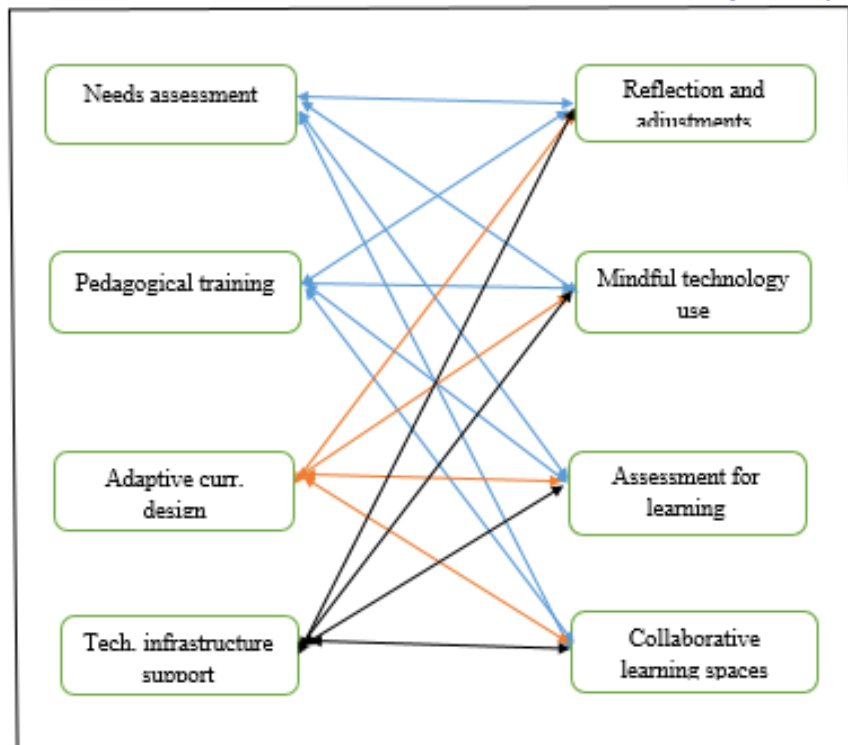
Figure 1. Human-centric ICT integration model (Authors' own design).

Needs Assessment for Goal Setting

- Human-centric goals: Identifying educational objectives emphasising on empathy, human connections and social development.
- Technology arrangements: Aligning technology integration to specific learning needs, avoiding superfluous use.

Needs assessment in humanising pedagogy is an approach to ICT integration where decision on courses to be learnt are based on students' reason for learning and the content and materials of the courses must present real life situations (Widodo, 2017). For the South African context, needs assessment should of necessity include humanised pedagogy modelling for preservice teacher training in particular (Alasadi & Baiz (2023); Sengupta, et. al., 2020).

Pedagogical Development and Training

- Humanising pedagogy workshops: Training teacher educators in humanised learning approaches, emphasising collaboration, creativity and critical thinking.
- Responsible technology integration: Training teacher educators on ethical and responsible classroom technology use.

It is a concept in humanising pedagogy to train educators both in ICT skills and in integration skills (Bykov & Leshchenko, 2019). Educators must come to a point where they own the knowledge and are comfortable with it for easy manipulation so they are better equipped to control cognitive overload and ineffective use. Professional development of educators entails focusing not only on technical proficiency but also on strategies for enhanced student engagement (Fawns, 2022). *Adaptive curriculum design*

- Differentiated adaptive instruction: Developing preservice teacher curriculum materials catering diverse learning abilities and styles through leveraging adaptive technology.

Implementing personalised learning through ICTs can help address individual student needs and preferences. Adaptive learning platforms can tailor content and pacing, allowing students to explore subjects at their own speed, encouraging critical thinking, fostering a supportive, one-on-one relationship between the student and technology (Govender & Naidoo, 2023). By blending the principles of humanising

pedagogy with ICT competencies, educators can foster meaningful connections between students and their learning materials (Bykov & Leshchenko, 2019).

- Cognitive load management: develop strategies that help prevent cognitive overload; chunking information to provide multimedia resources thoughtfully.

Wholesale implementation of technology leads to cognitive overload and social disconnect among students, becoming one of the reasons for mental health deterioration with its consequences (Rutkowski & Saunders, 2018). Recently, there has been a rise in suicides and suicidal attempts by university students in South Africa and according to Hako (2021), the rates in South Africa are significantly higher than those from other parts of the world. Techno-equipped teacher educators play a crucial role in the way they integrate technology to improve rather than weaken students' mental health (Mortiboys (2013). The overall purpose, besides knowledge acquisition, is for learners to be able to navigate own emotions and inter-personal relationships, for these three form the basis for life (Prothero, 2022).

Technology Infrastructure Support

- Reliable ICT infrastructure: Ensure robust, technological infrastructure to handle curriculum demands uninterrupted.
- Technical support: Establish support systems for teacher educators for prompt management of any technological challenges.

South Africa as a developing country needs to catch up in the fourth industrial revolution (4IR) global playing field and according to Kruss et al. (2015), a country needs to be technologically capable to catch up in the 4IR. Higher education is characterised by huge digital gaps between urban and rural campuses and among students as ICT connectivity is campus centred compounding inequality rates in education (Woldegiorgis, 2022). Humanising pedagogy must take care of the difficulties with internet access, expanding availability and support beyond campus spaces. Woldeiorgis (2022) further explained that there is poor digital development at many universities in the country despite significant infrastructural developments, which calls for deliberate practical approaches to context-based solutions that include readily available technical support within and beyond campuses. Alternative sources of electricity have also suddenly become a need in the face of load-shedding as the country's capacity to navigate the digital revolution largely depends on reliable electrical power (Qakoshe, 2022).

Collaborative Learning Spaces

- Online and offline collaboration: Encourage and promote digital and non-digital collaboration activities for social interactions and development.
- Community building: Promote and nurture a sense of community within and beyond the classroom, using online platforms for collaboration and discussions.

Utilizing technology to create collaborative online spaces, such as discussion forums or virtual group projects, can promote interpersonal relationships among students (De Back et al., 2021). This would in turn work on developing their social education instead of curtailing it. Technology integration, instead of isolating learners rather encourage them to work together, share ideas, and provide peer feedback (Dichev et al., 2021). Teachers should also actively participate in these spaces to create a sense of community and to offer guidance, thereby humanising the online learning or hybrid experiences.

Assessment for Learning

- Formative assessment tools: Use of technology in formative assessment, measuring learner understanding in real time.
- Feedback mechanisms: Timely and personalised feedback mechanisms essential for individual growth of learners.

Utilizing online activities like game-based assessment tools instead of relying solely on traditional methods of assessment tend to provide insightful assessment for learning in an individualised way at the same time satisfying students' instant gratification needs (Kivunja, 2014; Olga et al., 2022). Teacher educators must

therefore balance instant online feedback with the traditional long-time modes to acknowledge students' needs in the process of humanising their pedagogical practices (Cilliers, 2017).

Mindful Technology Use

- Digital citizenship behaviour: Lessons to include responsible digital citizenship for wholesome online behaviour within balanced screen time.

Mindful use of technology in education means focusing on maximising technology potential and minimising its shortcomings (Alasadi & Baiz, 2023). This is possible through prevention of an overreliance on screens by balancing screen time with other pedagogical methodologies (Ali, 2023). Ethical, responsible technology-use is a major principle in humanising pedagogy (Cillier, 2017), this is an important skill for preservice teachers as they carry the responsibility of preparing the greater populace for the digital world in a way that reduces cybercrimes and tech-negativities.

Reflection and Adjustments

- Continuous professional development: Regular reflection for teacher educators
- Model adjustments: Adjusting integration model through feedback, emerging trends and advancements in technology.

Reflection and adjustment is done at every levels of the model to ensure that goals of the humanising process continue to be met as teaching and learning takes place. Setting up communities of practice (CoP) for teacher educators provide professional space for reflection with colleagues on their pedagogical practices for refinement (MacDonald, 2008). The CoP further provides collaborated research space as teacher educators examine their actions and evaluate alignment to intended goals and products (Brown, n.d.). Through reflection teacher educators thus, are able to identify new teaching strategies and areas for improvement.

Conclusion

The article attempts to contribute to an ongoing search for solutions towards a holistic implementation of ICT integrated teaching and learning in the educational arena. In so doing, we engaged with theory as we tried to provide meaningful mitigation of unmindful wholesale integration of ICTs in education and its potential harm to students. We argue for humanising pedagogy by proposing a conceptual human-centric ICT integration Model outlining factors that directly impact the gap presently existent between this widespread use of ICTs and their effective implementation in education, namely, needs assessment, pedagogical training, adaptive curriculum design, technology infrastructure support, collaborative learning spaces, assessment for learning, mindful technology use, reflection and adjustments. The paper suggests that digital humanistic pedagogy, need to be understood by teacher educators as a very important component in the provision of an essential global compliant education for citizens.

Limitations and Recommendation

By focusing primarily on the South Africa context and sub-Saharan Africa in general, the human-centric model limits itself to the developing world and there is need to evaluate the model from an international context. Further studies can also be done by analysing documents to investigate the successes of humanising pedagogy on institutions practicing this pedagogical concept.

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