Colloquium presentation at the Aga Khan-IED Conference
Oct 23-25, 2017, Hotel Africana, Kampala, Uganda
Theme: RETHINKNG TEACHER EDUCATION: IMPROVEMENT, INNOVATION AND CHANGE

Teacher education in the 21st century digitalization: Open access, digital health and wellness

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Abstract

Professional development is about both seasoned/veteran or novice teachers being better learners too. The 21st century learning environment for teachers is technology infused and induced. The students having the dominance of being technology savvy, creates a direction for crafting a teacher who should not only be technology conscious but one who utilizes this technology to avail of endless information, great ideas and breakthroughs from scholarly works and scientific researches to enhance, innovate and effect first order and second order changes in the teaching-learning environment. This colloquium then intends to highlight inclusion of open access (OA) digital health and wellness in the professional development of teachers. Authentic information from the two seminars/workshops (facilitated by Mr. David Ball, Project Officer for 2 European Union projects on open access: PASTEUR4OA and FOSTER; African Centre of Excellence for Information Ethics/ACEIE, Department of Information Science, University of Pretoria, South Africa) attended by the authors are orchestrated into impressive pedagogical tools to share vital knowledge and skills pertaining to open access, digital health and wellness (citizenship norms, health and ergonomics, information ethics, cyber safety and security).

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1. Presentation outline

1.1 Relevance to the conference theme: Highlighting inclusion of open access and digital wellness in the professional development of teachers is one vital aspect for institutional administrators and teacher learners to navigate competently, professionally and ethically in the use of technology in the teaching-learning environment thus shifting for change and innovation the multifaceted intellectual and skills stature of teacher education.

1.2 Expected outcomes

1.2.1 The curriculum developers for teacher education will design a well crafted and blended technology driven teacher education curricular landscape that maximizes open access, digital health and wellness as part of institutional footholds for teaching-learning, research and community engagements in this present digital society;

1.2.2 With clear orientation and comprehension on open access, digital health and wellness, the administration and management will support these directions in their respective institutions:

(a) Establishment of a repository for the global visibility of the scholarly works of the academic and administrative staff;

(b) Development of policies such as an open access policy as guidelines for repository depositors; a digital health and wellness policy to reflect the standards for health, safety and security in the use of computers, internet and several technological devices;

(c) Literacy and advocacy drive on open access, digital health and wellness for the staff members and students to be part of a nurturing digitalized community ;

1.2.3 The teacher learners will utilize the information about open access and digital wellness to avail of endless information, great ideas and breakthroughs from scholarly works and scientific researches to enhance, innovate and improve :

(a) Their teaching skills even beyond student life in teacher education and throughout life (lifelong learning);

(b) The delivery of useful and recent information related to digitalization to students in their respective schools.

1.3 Presentation techniques

This presentation consisted of the following modes of delivery techniques

1.3.1 Pedagogical strategies

(a) Adaptive mode (Open access):Using a computer for power point presentation with animation pane and effects

(b) Hybrid/Blended/Mixed Mode (Digital wellness): Combining power point presentations with ergonomic exercises

(c) Flipped mode/Discussion-oriented (Information ethics, cyber safety and security): Utilizing a video on information ethics/do's and don'ts when using social networks followed by presenter-participants interactions

1.3.2. Materials shared to the conference participants

(a) Print outs reflecting the presentation outline

(b) Slide print outs on open access, digital wellness and ergonomics exercises

(c) Video on information ethics/do's and don'ts when using social networks

(d) How to unplug and detoxify from the digital space

2. Paper content

2.1 Introduction

2.1.1 Teacher education in the 21st century digitalization

Across forces, reshaping the industrial world such as international integration, digitalization and knowledge revolution, teacher education struggled to survive for centuries to professionalize and fully integrate in the academic milieu. Walsh (2013) emphasized lifelong path of learning instead of actual knowledge as a function of teacher education. While Boaduo and his colleagues (2011) argued that in order for the teacher to nurture the learners, using technology is one of those necessities. On the same note, Kajoro and his other co-authors (2013) also spelled out information and communication technology as one of the elements of an effective teacher education program highlighting mostly at the forefront the East African context. Indeed, the emphasis on technology and the attached undesirable affectations cannot be underscored.

2.1.2 Digitalized open educational resources for teacher education

Contributory to student achievement and employability is an important teacher factor called an inspiring, engaging/enabling and well informed teacher/educator. In teacher education therefore, this contention may serve to stimulate the mentors and the learners to think and rethink of the vital angles of the training content, engagements and support system for the new and seasoned educators by enhancing the teaching-learning experience to accommodate the immense and voluminous array of educational resources available for open use on line. The advent of the digital era in this 21st century positioned the information, knowledge and skills transfer in dramatically fast pace through the open access route where open educational resources (OER) are free and readily available. As conspicuously described by Wiley (2008), an open educational resource as a learning object can be used, reused, adapted and shared freely. On the other hand, the OERs were discussed by William and Flora Hewlett Foundation in Atkins, Brown and Hammond (2007) as mainly stressing free use under the public domain as well as no restrictions for use and the obligation to respect the author of the work (UNESCO, 2012) meaning that the author be cited and acknowledged by the user.

Open access is technology based that can share as much information as wide as possible globally. Though digitalization has elevated people's mindset and quality of life from conventional to technological arena, some pitfalls accompany either this evolutionary change (first order change) or revolutionary change (second order change or transformation). In less technology privileged locations of the world, teacher education could be more of brick and mortar reliant with challenging technological systems. In this scenario, having technology in some aspects of the teacher training program until it reaches the high technological level (HTL) is experiencing a first order change momentarily. If within a short time, the HTL has been achieved, considering the other areas of structure, process and people, this change has escalated to a second order change. The change from low to high technological level defines the gravity of the loads of learning materials earned by the users through open access and any other medium with consequent effect on the educational system in particular.

There are some drawbacks/risks with digitalization such as health affectations and abuses related to the use of information, computers, mobile phones, social media and other communication technologies. Large scale sharing and reuse in open access using

technology has expropriated this openness and the circumstances on those harmed maybe difficult to accept with an open heart.

2.1.3 Sharing on a wider scale

Further enlightened by the seminar/workshops (facilitated by Mr. David Ball, Project Officer for 2 European Union projects on open access: PASTEUR4OA and FOSTER; African Centre of Excellence for Information Ethics/ACEIE, Department of Information Science, University of Pretoria, South Africa) participated by the authors of this document, an open access policy and a university wide literacy and advocacy on open access and digital wellness have been in full implementation at Kampala International University, Uganda. It is within this context that this colloquium was conceived for the purpose of sharing on a wider scale, relevant information from the standpoints of open access and digital wellness with expected outcomes in mind in terms of curriculum design, positive behavior and attitude change for the administrators, mentors and learners in teacher education.

2.2 Open access

The term open access was first used in 2001 when Open Society Institute started Budapest Open Access Initiative (BOAI) advocating for the provision of free access to academic research outputs (Elsevier, 2017) and endorsed by UN World Summit in 2003 (UNESCO 2015). According to Glushko and Shoyama, (2015) and Ball (2016) OA is an ecosystem of freely available ideas, research input, output and publication. Free means the research outputs are available on the internet allowing anyone to download, distribute and use. In literature OA concept is also Open Education (OE), which is a collective term for describing institutional practices and program initiatives that broaden access to the learning and training (UNESCO, 2016). OA has the capacity to improves quality and diversity of educational opportunities (UNESCO, 2015) by bridging the knowledge gap of those able to access, process, utilize quality researched information and those who are not (Ahmed, 2007) because of no sufficient money and technology (Taylor, 2009). Academic information published in journals is very expensive for educational institutions to make it available to support teacher education. Gluskko and Shoyama (2015) argue that almost all academic research in the world is funded by the public through students' fees, parents' contributions and development partners. Then, if that is the case why should the same public pay almost twice to access the same research information for developing the same communities? Research results through OA initiative can be accessed online freely, immediately and in an innovative way. OA archiving technologies allow educational institutions to preserve pre-prints and post prints teaching and learning (Ball, 2016).

2.2.2 Forms of open access

There are many forms of Open Access advocated for in the learning and education worldwide. These forms aid access to learning, information and knowledge. However, there are two major forms namely gold and green.

2.2.2.1 Gold open access

This is when a publisher allows access to the research products freely immediately after publishing work is done at a fee paid by authors of OA articles before they are published (Glushko & Shoyama, 2015).

2.2.2.2 Green Open Access:

The research product has been published and the authors do self-archiving of their article in an institutional repository to make it open access sometimes after a period of restriction. Green Open Access is also known as '*libre'*. (University of Nottingham, 2016) and (Glushko & Shoyama, 2015).

2.2.3 Open access and teacher education

The teaching profession is the mother of all other profession in the world. When teachers are empowered then all other professions will be empowered. Best teacher education practices cannot be separated from technology and there is continuous learning and use of information in the 21st century (Hennessy, 2015). The growth of science and technology has changed the way traditional teachers and learners operate in a learning environment. Education is the key to all aspects of human life (Singh & Lewa, 2014). The future of education in the 21st century is not simply about reaching more people, but about improving the quality and diversity of education through the use of technology in teaching and learning.

Availability of information resources and easy access to these resources through open access initiatives; teaching materials, courseware, and case studies in a digital format will go a long way to empower teachers to produce the desired results. Open Educational Technologies and Open Educational Resources are viewed as carrying capabilities to transform teachers (Taylor, 2009). For instance the Open Learn Lab Space managed by the British Open University enables users to download and remix course content. E/merge conference is a virtual conference on educational technology in Africa and its goal is to generate and share knowledge-based information among the members of the community (Carr, 2017). Open-source course management and delivery software such as Moodle and Sakai offers the potential to reduce the costs of the software while providing institutions greater control over their financial resource (Monarch Media, 2010)

In the bid to promote and avail open access resources, several open access initiatives have taken effect worldwide. In order to have technology blended education, teachers are encouraged to exploit the open education offered by many educational institutions in 21st century to sharpen their knowledge and skills in the teaching profession. Below are some of the initiatives:

2.2.4 Open Access Educational Programmes

Open Education programmes occur when learning and acquiring skills is done by eliminating barriers that hinders people from participating in institution based learning. For instance The Open University (2017) in England and Wales provide free courses.

2.2.5 Open Courseware (**OCW**) is a course lesson created at universities and published for free via the internet. For instance Massachusetts Institute of Technology (MIT) offers open access courseware through its program known as Massive Online Courses (MOOC). This courseware provides interactive user forums to support community interactions among students, professors, and teaching assistants (Open education, 2016).

2.2.6 Open Educational Practices (OEP)

OEP promotes quality and innovation in teaching and learning through information, application, competence and responsibility in the field of specialization (Open College, 2017).

2.2.7 Open Educational Resources (**OER**) are freely accessible type of educational materials that are in the public domain or introduced with an open license. The aim of OER is teaching, learning and research. The nature of these open materials means that anyone can legally and freely copy, use, adapt and re-share them. OERs range from textbooks to curricula, syllabi, lecture notes, assignments, tests, projects, audio, video and animation.

Fuchs and Horak (2009) ascertain that OA is so advantageous to both the publisher/author and the consumer of the education through:-

a) Increasing visibility: Teachers who wish to author publications of their work can easily be accessed and ready without restriction which enhances the author's visibility on the web.
b) Citation rate: Some studies have shown that open access publications tend to receive more citations than subscription-based publications. This is known as the "Open access citation effect".
c) Compliance with research funder policies: Many funding agencies now require some kind of public access to research publications resulting from their grants. In the United States, National Institutes of Health funded projects have a public access policy (see: NIH Public Access Policy). Public access is required after 12 months, so this is not technically "open access" but embargoed public access.
d) Availability of free knowledge and learning

Education and knowledge that was very expensive before can be freely accessible through OA. Teachers can advance their knowledge in various fields through self-study and lifelong learning online. Schools and other educational institutions without enough instructional materials can use OA educational resources to teach or transfer knowledge to learners in any level.

e) Access to knowledge and education barriers are eliminated

Hindrances that made teachers fail to enroll for formal education like distance, lack of money, culture etc. have been removed through OA.

According to Ahmed (2007), Saariluoma (2007), Fuchs and Horak, (2009)**,** Singh and Lewa(2014) and UNESCO (2015) without ICT infrastructure such as internet bandwidth, mobile technologies, etc. in universities, companies, as well as individual homes, open access will severely be limited.Some of the rural population uses local languages whereas most of the open access materials and educative programs are in foreign languages.

2.2.8 Status of Open Access in Africa

The Open Access (OA) in Africa is gaining ground. Researchers, research managers and policy makers, journal editors and publishers, librarians, practitioners, students and general public have started to understand the benefits of OA and have started to implement OA projects in the region. So far UNESCO (2015) reported that over 500 OA journals published in North and sub-Saharan Africa are indexed in the Directory of Open Access Journals (DOAJ) and in African Journals Online (AJOL). About 125 repositories have been registered in the Directory of Open Access Repositories (Open DOAR) and 18 OA policies have been developed and registered in the Registry of Open Access Repository Policies and Mandates (ROARMAP). "This includes Kenya (five OA policies) and Zimbabwe (2 OA policies) from Eastern Africa; Algeria (two OA policies) from Northern Africa; South Africa (seven OA policies) from

the Southern African region and Ghana (one OA Policy) and Nigeria (one OA Policy) from Western Africa. The University of Pretoria (South Africa) became the first African University that adopted an OA mandate. International Livestock Research Institute (ILRI) (Kenya/Ethiopia) has adopted a proposal to use an open license for its published outputs."

Annual International Open Access Week in many African research institutions has also raised much awareness among scholarly communities of the region about the benefits of Open Access. OA in Africa has been possible because of collaborations and partnership with various bodies such as Stellenbosch University, The Academy of Science of South Africa (ASSAf), UNESCO, library consortia, EIFL, INASP and Irish African Partnership for Research Capacity Building (IAP).

2.2.9 Open Access in East Africa

According to UNESCO (2015 & 2016) and Kuchma (2014) currently there are 25 fully operational open-access repositories in Kenya, Tanzania, and Uganda, with 27 repositories been developed. A number of documents deposited in repositories continues to grow.

The major challenges of OA in East Africa is lack of OA policies and awareness. However plans to improve, spread and increase access to more repositories have been taken by different stakeholders like University Libraries under their consortia, such as the consortium of Uganda University libraries (CUUL), as well as government agencies like the National Council for Higher Education (NCHE) Uganda, development partners such as the Swedish Program for ICT in Developing Regions (SPIDER), INASP, EIFL, SIDA, SAREC and Carnegie Corporation of New York.

A number of workshops and trainings aimed at improving open access in the regions and Uganda in particular have since been conducted (Di Salvo et al., 2015) and (Ball, 2016) which include one that was facilitated by Mr. David Ball, Project Officer for 2 European Union projects on open access: PASTEUR4OA and FOSTER conducted at Kampala International University in June 2016. Due to these efforts many other universities have come on board with institutional repositories and policies which include Kampala International University.

2.2.10 Open Access in Kampala International University (KIU)

KIU has not been left behind. It has an open access repository with one of the latest software (DSpace) available which is growing popular and of recent the University Council enacted an Open Access Policy (Kampala International University Library, 2017).

2.3 Digital health and wellness

The technological dynamism of the 21st century has created a digital world with the people in it called digital citizens (Ribble, 2017) or digital natives of the cyberspace. The digital community has inhabitants across generational differences such as the *traditionalists* (born before 1945*); baby boomers* (born 1945-1964), *generation X* (born 1965-1980), *millennials/generation Y* (born 1981-1999) and *iGeneration/generation Z* (born since 2000) (Birkman International,Inc., 2016). Various forms of technological devices and avenues have emerged ranging from modern computers, tablets, video games, smart phones to internet, social media networks, cloud computing and the like. However, along with change are advantages and disadvantages. Right at one's abode,

business can be transacted and money generated with no sweat on just mere use of technology; anywhere and everywhere in the world educative information and interactions happen through webinars, podcasts, video-conferencing and skype at the least cost instead of the conventional costly face to face conferences and meetings. More and more rapidly accelerating transfer of information, skills and productivity occur because of the digital revolution. While on the other hand, the disadvantages while using technology can outweigh the merits if prevention of the harmful consequences is not equated to a pound of safety and security through literacy and raising consciousness.

The use of technology then has physical, emotional, psychological and mental affectations if abused, misused and not maneuvered intelligently and responsibly. In view of this premise, digital health and wellness is thus highlighted in this paper. These aspects are discussed in sequential order: digital citizenship norms, ergonomics related to digital use; health issues related to digital use; information ethics; cyber safety and security.

2.3.1 Digital citizenship norms

Norms are shared acceptable standards of group behavior (Robbins, 2002). Typically, norms refer to social behaviors expected to be complied by the group members. Digital citizenship norms simply imply responsible behaviors when using technology. Ribble (2017) affirmed that digital citizenship is both a "concept and a teaching tool" on how one acts in a technological society. Davis (2016) elaborates that digital citizenship "needs to be embraced by educators as a way of thinking and incorporated, whenever possible, into any type of existing curriculum." In digital language, there are nine elements or themes of digital citizenship (Ribble, 2017) and are described as follows: (a) *digital literacy* (educating about the appropriate and safe use of technology); (b) *digital access* (the opportunity to fully participate electronically in a digital society hence digital citizens with less access to technology must be assisted and provided and not deprived of digital access); (c) *digital etiquette* (how to act, communicate and conduct oneself electronically by complying with the standards); (d) *digital rights and responsibilities* (freedom and duty related to appropriate use of technology ex. privacy, free speech etc); (e) *digital communication* (information exchange, sharing and transfer through e-mail, cellular phones etc); (f) *digital commerce* (buying and selling of items/goods available through the internet that should be done responsibly); (h) *digital law* (rules in using technology, ethics and responsibility for actions and deeds electronically e.g., avoid cyber crime in terms of hacking, piracy, identity theft, injecting worms, viruses, sending spam); (i*) digital health and wellness* (well-being physically and psychologically in the use of technology); (j) *digital security* (protection of oneself and own information from external and malicious disruptions e.g., data back-ups, virus protection, firewall). Under the "principles of respect, educate and protect," Ribble (2017) grouped these elements for oneself and others based on *respect* (digital etiquette, access, law); *educate* (literacy, commerce, communication) and *protect* (digital rights and responsibility, security, health and wellness).

2.3.2 Ergonomics related to digital use

Whether in the workplace or at home, under normal and routine scenario, computers with monitors, cables, keyboards and mouse are used along with lighting and office furniture such as computer tables/desks and chairs. At this juncture, ergonomics as a science takes into consideration the human body mechanisms (such as sitting and

standing balance, posture) and matching it with the design of the workspace and fitness of the job to the worker; sedentary behavior and comfortable movement while at work or at home using a computer. "The goal of ergonomics is to reduce stress and eliminate injuries and disorders associated with the overuse of soft tissues e.g., muscles or tendons, awkward posture, and repeated tasks." (National Institute for Occupational Safety and Health, Georgia, USA). A sound ergonomics therefore, provides greater safety, minimizes injuries, decreases discomfort and increases work performance in terms of efficiency, effectiveness and productivity. Prolonged sitting (Seliger in WebMD; Capitolo, 2013) is not advised and ergonomic exercises are suggested in between an hour's work with computer usage. Several exercises are advised in a day a few times for the neck (head rolls, head turns, chin tucks); shoulders (shoulder rolls and stretches); wrists, hands and arms (wrist stretch); upper and lower back/ULB (ULB stretches, back arching); legs (foot rotation); eyes (look up, then down, look right then left) (University of the Sunshine Coast, Australia). Some of these doable and simple practices and exercises are (1) for muscle integrity in forms of sitting on an exercise ball; hip flexors stretching; walking during commercials when watching TV or more strenuous exercise if not contraindicated; standing in 30 minutes after prolonged sitting; back stretches on computer adjustable chair (5 seconds. 3x each) such as chest up elbows out, side stretch (each arm up) and hamstring stretch, wrist and fingers exercise; yoga poses (cow and cat poses) (Bratskeir, 2015) to improve back extension and flexion.

2.3.3 Health issues related to digital use

Digital health and wellness mean keeping the well being of the mind and body safe while using digital devices. In most cases, long sitting more than an hour with computer screen too close to the eyes, bent posture, frequent typing and clicking, inappropriate lighting, furniture and non- conducive work environment 24/7, predispose the eyes and muscles of the upper extremities (wrist, hands, arms, shoulders, back) and lower extremities (hips/pelvis, thighs and legs) to strains and pains; blood vessels and metabolic activity to some untoward disturbances/deviations from normal functioning.

Due to prolonged sitting using computer, internet, viewing the television, doing video games, the individual is bound to keep on eating (weight gain) or go hungry (affectation on the abilities to concentrate and think clearly) over computer engagement; metabolic activity is slowed down due to stagnation/sedentary work life precipitating undesirable health conditions like reduction in good blood cholesterol and blood circulation, increase in blood sugar, formation of blood clots, heart problem and cancer risk (Mercola, 2016; Saunders, 2010),

Maladaptive behavior changes and clinical signs and symptoms because of excessive internet use can become evident and alarming to note. Evading from the truth about the time used for computer and internet, withdrawal syndrome from social interactions and healthy inclinations, causing unnecessary arguments and disagreements, non-compliance to house rules, altered sleeping habits either waking up early or staying late at night on internet or inability to sleep (insomnia), poor hygiene, appearance and grooming, anorexia (loss of appetite), extreme fatigue and low academic grades are observable and identifiable manifestations of internet addiction (Beard,2005; Young, 1998). The study of Dong et al reported internet addiction consequences such as high depression, anxiety, hostility, interpersonal sensitivity and psychoticism (aggressiveness and interpersonal hostility).

To cope with the above bio-psychosocial, emotional and mental disturbances is to keep digitally healthy and well by using computers, internet and other electronic gadgets in moderation; maintain favorable practices and perform the suggested ergonomic exercises as part of quality and happy co-existence with computers and internet. The human being's way of handling his well-being should not be too engulfed with the digital online world. Equilibrium is recommended by the authors of this paper, between having the heart for digital devices and using the head/intellect for understanding digital life and avoiding being victims of the effects of chronic attachment to digitalization.

2.3.4 Information ethics

For reasons of order and not to inflict harm in the digital society, the delivery and use of ideas and other body of knowledge are governed by standards and rules for acceptable behavior. Information ethics according to the African Centre of Excellence for Information Ethics (ACEIE, 2015) has moral responsibility attached to information access, information and ICT use. Universally adopted legal instruments had been guiding the actions and behaviors of society in the cyberspace. These frameworks under the mandate umbrella of the UNESCO were the centerpieces for the world to live suitably in the technological sphere: (1) the Universal Declaration of Human Rights, International Covenant on Civil and Political Rights; and (2) Intergovernmental Council for the UNESCO Information for All Programme (IFAP). On October 16-17, 2013 at Riga. Latvia, world representatives and experts convened to preserve/protect/champion the ethical breadth and depth of the guidelines while surviving in the digital society, one of which stipulates conspicuously to:

> "Raise awareness about the ethical implications of the ICT use and development, particularly among young people, along with life-long education initiatives to equip all citizens with the skills and competence to participate actively and knowledgeably in the information society. New info-ethical and info-civic pedagogical paradigms may be envisaged in this regard to support new modes of global citizenship fully integrating digital media and virtual political spaces." (Riga Global Meeting of Experts on the Ethical Aspects of Information Society, 2013).

As educators in the modern age, we are continuously confronted with the question of what is 'right' or 'wrong' in the process of creating, finding, managing, accessing, preserving and using information effectively (Carbo & Almagno, 2001). With the extensive use of information and communication technologies (ICTs) in this information age, it is inevitable that we confront the openness of an information society and the speed at which information is shared and exchanged (Hoq, 2012). With the opportunities that this provides, there are setbacks that have come alongside it, that as educators we have to be concerned about.Information scientists have concentrated on expounding information ethics as focusing on four related but different aspects:

2.3.4.1 Respect for intellectual property

For all information accessed out there, there is someone who will have created it. Even if we search for it and it is freely accessed, there is someone who has worked hard to put it together (Severson, 1997). In that way it is someone's creation; it belongs to an individual or a group of people, which makes it someone's property. In some cases, it might be a song that someone wrote or a pamphlet that someone wrote for his/her pupils

or a course designed to assist learners to learn. When accessing and downloading such information, as educators we have to ask the question: is it right to copy this work without paying for it (if it requires one to pay) or without acknowledging the author (if it is requires us to do so). As authors and creators of knowledge, we have to protect the information we create and how other people access it. If we understand that what we have created is intellectual property or an 'asset', then we will begin to understand how important it is to protect it.

2.3.4.2 Principle of fair representation

Accessing information requires trust among the people sending and receiving information online and any other platform. This means that people must be able to trust one another that the information or products they are posting is true and appears as the seller says it will. However, we have seen many instances where someone advertises a product or information that they claim is something other than what it actually is.

2.3.4.3 Privacy and security

There is a lot of information shared online that requires us to share our private information, such as credit cards details, our address, names and passwords, among other things. While this is sometimes indicated as mandatory, it has become increasingly dangerous to protect one's privacy since our lives are digitalized (Severson, 1997). In such circumstances, and as educators we have to interrogate what kind of information should be shared or not shared online. This has put people's databases, web sites and other information at a high risk. People are concerned about their security and privacy than never before.

2.3.4.4 Non malfeasance

Accessing information online means people will not do anything or promote anything that might contribute to the decline of another person's life or affairs. People post information and share information online that harm other people and do not mind. Information has become a commodity or a product that is for sale and exchange hence making it sought after. Hence the forces of demand and supply are applied in this case and people being so individualistic leads to lack of morality when sharing information.

The realm of information ethics also includes the following dimensions and violations and are simply described separately:

A. Dimensions

A.1 Copyright: Lawful and sole right of the author for the use, sale and distribution of his work

A.2 Right to privacy: Justified to be secured as an individual, in his home, for his documents and from unreasonable intrusions

A.3 Fair use: "Any copying of copyrighted material done for a limited and "transformative" purpose, such as to comment upon, criticize, or parody a copyrighted work. Such uses can be done without permission from the copyright owner. In other words, fair use is a defense against a claim of copyright infringement. If your use qualifies as a fair use, then it would not be considered an infringement." (Copyright and Fair Use, Stanford University)

A.5 Internet ethics: Acceptable behavior when using the internet such as practicing honesty and respect for others using internet.

B. Violations

B.1 Plagiarism: Owning other author's work by not citing nor acknowledging the original creator

B.2 Hacking: Accessing data through a computer system illegally

B.3 Illegal downloads: Reproducing materials from internet with no authorization from the original author of the work unless some rights such as those embodied in Creative Commons Licenses are reflected.

B.4 Software piracy: Illegal reproduction and distribution of software

B.5 Piracy of intellectual property: Unauthorized or trespassing of the implicit assets of an individual

B. 6 Computer infections: Inflicting virus and worms to alter/damage the computer . A *computer virus* affects the operating system and program, slow acting and locally confined. While a computer worm, threatens the network security and bandwidth and spreads rapidly.

2.3.5 Cyber safety and security

The environment where digital communication, internet and computer networks exist is called a cyberspace. ACEIE, 2015 describes the cyber space as the internet world (web-sites and networks). Within this habitat means being smart, disciplined, aware with sense and responsible when using internet and being well informed of the risks and dangers that affect the personal life and reputation while in the cyberspace. Thus, cyber safety is no longer a moment's decision but strongly obligatory for anyone who uses the internet. What is most important is what one cannot do but rather what he can do in order to be safe with internet use. Salient tips on cyber safety, refer to these aspects; share information that are not personal; be quick to detect spam and virus inflection through e-mails; be friendly and respectful when responding to emails to people known to you; anything strange can be harmful so be smart; keep calm when harassed on line (cyber bullying) or through any other device and think with sense to counter the attack; and comply with institutional or house cyber ground rules.

Cyber security on the other hand, implies challenges related to data protection; operating and program systems; computer networks and bandwidth; cyber virus attacks and worm infestations; security protocols of both internal and external servers; technological complexity; regulation and maintenance of technology; education and training. Just as there are vast technologies for competitive advantage, there are also counter cyber tools to demerit and misuse technology. Hackers have their weapons to crack big data from critical facets such as the government and large business firms. The fight over cyber crimes may or may not end unless there are robust security systems to protect or recover from the attack.

Conclusions

Open access: There is no doubt that open access inclusion in teacher education has the potential to revitalize the education systems of the world and enhance teaching, lifelong learning, research and development of society. While it is true that open access can indeed transform the 21st century teacher education, there may still be challenges unresolved in the areas of (1) curriculum design and implementation; (2) the levels of awareness, acceptance and usage from the teachers and students and institutional support for technology infrastructure to make open access a part of academic life.

Digital health and wellness: It is undeniable that being technology connected has a great association with the well being of the digital citizens. The issue of balancing the relationship in a stable and sustainable fulcrum may become too difficult if ergonomic exercises, detoxifying and unplugging at regular intervals from the gadget world and digital habits are not in anyone's dictionary.

Information ethics: Digitalization is not bad at all when used for advancement and prosperity. Individual differences and personal idiosyncrasies in human nature can be used as reasons for any other person to lose his life, identity and dignity in a split of a second due to violations of information ethics. Staying connected on being socially and responsible humans remain a reality in the midst of this information age.

Recommendations

Based on the expected outcomes of this presentation, the authors suggest the following details:

1. Integration of open access and digital wellness in the curriculum of teacher education and other academic disciplines by either embedding them in the computer course or in any engagement where they deem necessary;
2. The technological infrastructure like a repository software be taken into account by the institution to make open access possible and available for the administrators, mentors, students and staff of teacher education. Institutional repositories archive open access institutions' research heritage for future use.
3. Development of these policies: (1) an open access policy to serve as guide in the management of scholarly works deposited in the institutional repository; (2) digital health and wellness policy emphasizing the do's and don'ts related to digital use; health risks, safety and security tips while using the computer and internet and other technological gadgets.
4. An institutionally wide literacy initiative to advocate open access and digital wellness to all institutional workforce on a regular basis;
5. Advocacy for open access publishing and encourage researchers to value and publish in open access journals to increase availability of information products;
6. For the concerned institutions offering teacher education to propagate open access not only to their students and staff but as part of the community engagement content;
7. An applied research and development component of the open access, digital health and wellness implementation as a springboard to evaluate the extent of information and skills transfer and digital accountability;
8. For the students of teacher education to make open access, health and wellness be part of their digital and academic life as well as for their learners in their respective schools/universities/organizations;
9. Teacher learners and educators should utilize the vast open access researched information for professional development;
10. For the conference participants to share to significant others and apply the following practical tips for a healthy well being and mindset while thriving in the digital community: (a) ergonomic exercises; (b) do's and don'ts when using social networks;(c) unplugging and detoxifying at regular periods from digital devices.

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