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DIGITALIZING EDUCATION IN INDIA: KEY ISSUES

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Abstract

The new trend in the field of education is digitalization of the education sector. India seeks to digitalise school and university education with projects like digital classrooms, digital boards *etc.* at the school level; and projects like SWAYAM and MOOCs at the university level. Digitalization education can go a long way in improving access to education. However, there is a need for taking a cautious approach to this digitalization *i.e.,* it is imperative to analyse how these technologies are beneficial to learning; as well as how they are detrimental for the students. For example, it may lead to aggravation of exclusion in education for children belonging to the poor families who cannot afford digital devices like laptops, computers *etc.* In addition to this digitalisation and unbridled access to internet can lead to a whole host of new problems like that of cyber-bullying, cyber-stalking *etc.* Thus, digitalization of education has both pros and cons to it, and therefore this paper argues that it is important to carefully strategize the use of technology in the education sector.

Introduction

DIGITAL TECHNOLOGIES[1] are becoming ubiquitous. India is fast moving into this field. A flagship programme 'Digital India' launched by Indian Government aims at transforming India into a digitally empowered society and knowledge economy, endowed with digital infrastructure for digital delivery of services.[2]

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1 Digitization is the conversion of physical, analogue originals into digital format through a scanner, camera or other electronic device, *available at:* http://www.unesco.org/new/fileadmin/multimedia/hq/ci/ci/pdf/mow/digitization_guidelines_for_web.pdf. Digital content involves the creation, sharing, and accessing of educational content in digital forms, including online courses, videos, digital libraries and texts, games, and apps. This content is moving away from static reproductions of textbooks and learning materials towards interactive education software and online learning products.

2 Digital India aims to provide the much needed thrust to the nine pillars of growth areas, namely broadband highways, universal access to mobile connectivity, public internet access programme, e-governance: reforming government through technology, e-kranti - electronic delivery of services, information for all, electronics manufacturing, IT for jobs and early harvest programmes. Each of these areas cuts across multiple ministries and departments. It is implemented by the government with overall coordination by the Department of Electronics and Information Technology (DeitY). See Digital India, *available at:* https://digitalindia.gov.in/content/programme-pillars.(last visited on Dec. 30, 2019)

Recognizing the need of changing nature of jobs in the emerging age of intelligent automation, 'Digital India' project seeks to provide universal digital literacy and make digital sources easily accessible. Linking villages by optical fiber is also a step in that direction. Moreover, the project aims at re-skilling of existing workforce in the backdrop of emergence of new technologies. 'Digital India' necessarily implies push to use of digital devices. With a population of over 125 million, India provides a huge market for mobile phones. Already, the country has nearly 500 million internet users.

II India's education system – quest for digitalization

Digitalizing India is also penetrating education sector rather earnestly with quest for digitalizing educational institutions at all levels. Distant education in India is prevalent on a large scale. A large number of open universities have been established in India for providing the facility of distance education to people who are unable to pursue regular courses. These universities offer undergraduate, post graduate and doctoral programmes under open distance learning system. They also offer vocational diploma and certificate level courses to students who have not completed regular school education.

India has launched SWAYAM (Study Webs of Active–Learning for Young Aspiring Minds) programme which brings together India's educational institutions reputed for excellence and offers courses by eminent faculty in all disciplines and at all levels from high school to master's level. Designed around three principles *viz.*, access, equity and quality, it is a programme delivered in the MOOC (massive open online course) format, aimed at empowering its users with knowledge and skills.It facilitates hosting of all the courses, taught in classrooms from class nine till post-graduation and can to be accessed by anyone, anywhere[3] at any time. The courses prepared by the best teachers in the country are available free of cost to any learner.[4] The University Grants Commission (UGC) of India has already issued the credit framework for online learning courses through SWAYAM[5] so that universities/colleges can approve credit transfer for these

3 Learners wanting a SWAYAM certificate should register for the final proctored exams that come at a fee and attend in-person at designated centres on specified dates. Eligibility for the certificate will be announced on the course page and learners will get certificates only if this criterion is matched.

4 The courses hosted on SWAYAM are in four quadrants – (i) video lecture, (ii) specially prepared reading material that can be downloaded/printed (iii) self-assessment tests through tests and quizzes and (iv) an online discussion forum for clearing the doubts. Steps have been taken to enrich the learning experience by using audio-video and multi-media and state of the art pedagogy / technology.

5 UGC Regulation 2016 is a policy instrument for advising the universities to identify courses where credits can be transferred on to the academic record of the students for courses done on SWAYAM.

courses - twenty per cent credit with easy credit transfer complementing academic programme.

The government also aims at digitalization school education in India, and envisages endowing schools with digital infrastructure, notably, digital boards, digital classrooms, one-laptop-per-child project, machine learning artificial intelligence *etc.* Thus, India is creating avenues for digital technologies which are transforming the landscape of education inducing a competitive spirit in quest for embracing them. Developments of these technologies at global level are fascinating. They provide vast opportunities for new forms of connections and collaboration, as knowledge and information can be digitalized and transmitted electronically.[6] Digital devices multiply learning pathways and diversify learning approaches.[7] Internet and communications technologies (ICTs)[8] are used to access digital content, which can be digital versions of analogue originals such as scanned textbooks. Increasingly, content is being designed with digital use in mind. Online education materials and courses, e-textbooks, and streaming video and audio files used on the internet, variously referred to as e-learning,[9] are revolutionizing the provision of education. A multiplicity of learning sites and modes exist for delivering technical and vocational education and training. As a result, such education and training is also provided in a "virtual learning environment" by means of internet-based education and training and elearning and e-training initiatives. These developments in digital technologies also expand avenues for lifelong learning. They enhance possibilities for informal education and learning. Moreover, they open new vistas for "self-learning."

III Need for a cautious and critical approach

An increasingly "technology rich environment"is required to enable education institutions, at all levels to meet the needs of providing every citizen with the knowledge, skills and competences as well as the lifelong learning opportunities.

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6 Susan d'Antoni, (ed.) *The Virtual University: models and messages: lessons from case studies*" 51(IIEP UNESCO, IIEP Paris (2006).

7 UNESDOC Digital Library, "Leveraging Information and Communication Technologies to Achieve the Post-2015 Education Goal Report of the International Conference on ICT and Post-2015 Education" 5 (UNESCO 2015).

8 ICT is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as videoconferencing and distance learning, *available at:* http://searchcio.techtarget.com/definition/ICT-information-and-communications-technology-or-technologies(last visited on Sep. 30, 2019).

9 "E-learning refers to the use of information and communication technology to enhance and/or support learning in tertiary education: both online provision and computer based or other distance based provision". See, Centre for Educational Research and Innovation, *E-Learning in Tertiary Education: Where do we Stand* OECD 11(2005).

However, in order to unleash potentials of ICTs, policy makers need to understand their role in delivering equitable and quality lifelong learning opportunities, and the sector-wide strategies of integrating ICTs need to be informed by debates between education and ICT sectors.[10]

It is important to bear in mind that introduction of ICTs and digital devices by themselves do not enhance quality of learning. A recent Organisation for Economic Cooperation and Development (OECD) study found that over the past 10 years there has been no appreciable improvement in student achievement in reading, mathematics or science in countries that have invested heavily in ICTs for education.[11] These findings must concern policymakers and governments who hope to find salvation in expensive technological purchases.

Analysing the policy implications of use of ICTs and digital technologies in terms of what they entail – not only how they are beneficial but also how they can also be detrimental to human values if not properly controlled and regulated, is a critical question.The expanding horizons of ICT's and digital technologies involve a number of ethical, moral as well as legal and policy issues which deserve careful consideration in elaborating education strategies and policies. This calls for earnest attention as the 'digital tsunami' is so overpowering and legal and policy responses are not able to keep pace with it. Negative implications of use of digital devices in education, especially their deleterious effects on education system and on the exercise of the right to education as an internationally established right require full attention and careful consideration. Digitalization has repercussions on the right to education as an entitlement in terms of access to education respecting international legal framework as laid down in UNESCO's Convention against Discrimination in Education, 1960 and other international human rights conventions. But it also affects the right to education as empowerment in terms of knowledge, values, competencies and skills imparted through education. This also holds good as regards the right to learning. The use of digital devices thus must be seen with a perspective on the realization of the right to education and learning which is fraught with huge challenges. Prevailing marginalization and inequities show limitation on access to education. The empowering role of education also suffers due to shortcomings in quality education. These limitations

10 UNESCO Conference on ICTs and 2030 Education Agenda, 2015, *available at:* http://wayback.archive-it.org/10611/20171122190730/http://www.unesco.org/new/en/unesco/themes/icts/policy/international-conference-on-ict-and-post-2015-education/ (last visited on Nov. 25, 2019).

11 Andreas Schleicher, "Students, Computers and Learning: Making the Connection. Paris" OECD Publishing 2015, *available at* :http://www.oecd.org/publications/students-computersand-learning-9789264239555-en.htm. (last visited on Dec. 30, 2019).

and shortcomings are accentuated with the introduction of digital devices and raise some legal and policy questions of critical importance.[12]

IV Aggravating marginalization in education

Access to education and learning as an entitlement is far from being equitable today on account of growing marginalization and exclusion in education. Those who are marginalized and especially children from poor families cannot afford digital devices such as computers, tablets and smartphones, and broadband required to access the Internet, as these are costly. The costs of obtaining access to the internet and internet-connected electronic devices and services can be exorbitant for those who are marginalized and are deprived, on account of their financial capacity and meagre resources to avail of these. Digital devices are not always affordable in the developing world, neither to students nor to public educational establishments. The high costs of digital technology are causing universities to establish consortiums to share resources, costs and infrastructure.

Only the affluent can avail of best performing and latest devices whereas others depending on their social condition and economic situation have to do with less performing or even remain deprived. This affects the fate of over two billion people in the world who are victims of poverty and remain deprived of or under-served in benefiting from digital devices. This is a biggest moral challenge for bringing about inclusive and equitable education system and for ensuring equality of educational opportunity in education.

In tandem with growing social inequalities, one witnesses in India as in many other developing countries 'digital divide', emanating from increasing gap between the 'haves' and 'have-nots'. Such a gap aggravates disparities in access to learning based on ICT's and digital technologies. Devices such as computers, tablets and smartphones, and broadband required to access the internet can reinforce existing marginalisation and inequalities in education which impinge upon the guiding principle of an all-inclusive approach.[13] This poses huge challenges in India where the gap between the rich and the poor is abysmal, with nearly one third of India's population being victim of poverty. Widespread poverty makes a mockery of the stipulations in the Universal Declaration of Human Rights that, "all human beings are born free and equal in dignity and rights." Gross inequalities in possession of wealth

12 For a full treatment of legal and policy issues, see, Kishore Singh, "Issues and Challenges to the Right to education in the digital Age" A/HRC/32/37, 2016, *available at*: https://documents-dds-ny.un.org/doc/UNDOC/GEN/G16/070/34/PDF/G1607034.pdf?OpenElement. (last visited on Dec.30, 2019).

13 Special Session of the UN Broadband Commission for Sustainable Development: Joint Statement (Jan. 2016), *available at*: http://www.broadbandcommission.org/Documents/publications/davos-statement-jan2016-en.pdf. (last visited on Dec. 20, 2019).

in India have been brought forth by the OXFAM Report at the World Economic Forum Annual Meeting, 2019,[14] showing the vast gap between the rich and the poor in India as a stark reality.Public authorities need to grapple with the issue of multiple digital divide present in many countries, particularly in developing and least developed countries[15] in the fast growing field of higher education.

Policies for digitalizing education should be screened and assessed bearing in mind the India's international legal obligations for the right to education, flowing from the International human rights conventions. India is original signatory to the Universal Declaration of Human Rights, 1948 (UDHR) which lays down moral foundation of the right to education. The declaration provides that, "Everyone has the right to education. Education shall be free, at least in the elementary and fundamental stages. Elementary education shall be compulsory. Technical and professional education shall be made generally available and higher education shall be equally accessible to all on the basis of merit."[16] According to the UNESCO Convention Against Discrimination in Education 1960, The International Covenant on Economic, Social and Cultural Rights, 1966 and all other international human rights conventions, even higher education should be made progressively free. Digitalization of education should be seen in the context of these state obligations which establish the right to education as entitlement free of costs. The right to education makes it obligatory for states to ensure that, "Education in all its forms and at all levels" exhibits some interrelated and essential features in terms of its availability and access in functioning educational institutions and programmes with facilities, "such as a library, computer facilities and information technology", as well as access to education through "distance learning" programme.[17]All such facilities should, like the provision of text books, be free of costs.

The legal obligations of states should also be perceived in conjunction with moral obligations of governments, flowing from their political commitment for the right to education within the framework of the 2030 Sustainable Development Agenda, adopted

14 OXFAM Report to the World Economic Forum Annual Meeting, 2019, "The shocking truth about inequality today", *available at*: https://www.weforum.org/agenda/2019/01/the-shocking-truth-about-inequality-today/.(last visited on Sep. 30, 2019).

15 Global High-Level Policy Forum, "Online, Open and Flexible Higher Education for the Future We Want. From Statements to Action: Equity, Access, and Quality Learning Outcomes" (June 9-11, 2015 UNESCO, Paris), *available at:* http://www.icde.org/assets/WHAT_WE_DO/POLICY/parismessage13072015final.pdf. (last visited on Oct. 10, 2019). See also, Christian Depover, François Orivel, *"Developing countries in the e-learning era"* UNESCO: International Institute for Educational Planning (2013).

16 Universal Declaration of Human Rights, 1948, art. 26.

17 General Comment 13 on the right to education (art. 13 of the Covenant) adopted by the Committee on Economic, Social and Cultural Rights at its twenty-first session in 1999.E/C. 12/1999/10, Dec. 2, 1999 (para 6).

at the United Nations Summit in September 2015.[18] Creating inclusive societies and leaving no one behind is leitmotiv of the agenda and economic progress that continues to leave untouched those who remain marginalized or who are victims of poverty is not compatible with it.While recognizing the importance of the spread of information and communication technology and global interconnectedness, the agenda stresses the need to bridge the digital divide and to develop knowledge societies.[19] It underlines the need for mobilizing the means required to implement it, based on a spirit of strengthened global solidarity and focused, "in particular on the needs of the poorest and most vulnerable and with the participation of all countries, all stakeholders and all people."[20]

India was represented by her Prime Minister while 2030 Sustainable Development Agenda was adopted. Alongwith other governments, India has thus undertaken political commitment to its implementation. The concept of 'justice and equity' embodied in the agenda is akin to values and principles enshrined in the Constitution of India which pledges to, "secure to all its citizens: justice, social, economic and political (…) equality of status and of opportunity." These values and principles are especially significant as regards the Goal 4 on Education – SDG4 – of the Sustainable Development Agenda to, "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" by 2030. The SDG4 is further elaborated in the Incheon Declaration, adopted at the World Education Forum, May 2015 which underlines the importance of education as a fundamental human right and public good, as a main driver of development. The declaration lays dawn 2030 Education Agenda and expresses the commitment by the ministers of education from all over the world, including from India, to "ensure the provision of twelve years of free, publicly funded, equitable quality primary and secondary education." However, in spite of such political commitments, one observes the trend towards decreasing investment in education in India and in many other developing countries.

V Jeopardizing education as a public good and public interest in education

Advocacy for multi-stakeholder partnerships are being considered necessary for resource mobilization for education. Technological infrastructure, along with the cost of the software, technician and educator training, and maintenance require significant

18 Resolution adopted by the General Assembly, *Transforming our world: the 2030 Agenda for Sustainable Development,* A/ RES. 70/1(25 Sep. 2015), *available at:* https://sustainabledevelopment.un.org/sdg4(last visited on Dec.30, 2019).

19 *Id.,* para. 15.

20 UN General Assembly, *Transforming our world: the 2030 Agenda for Sustainable Development*, GA/R. 70/1, 25 (Sep. 23, 2015).

financial support from the state. Resourcing for digital technologies inevitably creates space for private providers such as network operators, content providers and other stakeholders. Delivery of education through digital technologies involves private partners and agencies which collaborate with educational establishments and universities - public and private - not only on procurement and operationalizing hardware but also software.

The 2030 Sustainable Development Agenda is characterized by euphoria for multi-stakeholders and public-private partnerships. In India as elsewhere, governments are seeking partnerships for education to reach out to stakeholders and partners for resources as well as for support in infra-structural facilities, notably ICT's and digital devices. Private sector enterprises are emerging key players in education system and its digitalization.[21] Characterized as 'game changer' in global higher education, Massive Open Online Course (MOOC) has its genesis in commercially-led private/public partnerships, and fosters use of digital devices. MOOC which provides internet-based courses online is portrayed as an alternative path to access higher education.Many enthusiastic global promoters of knowledge societies, networking and lifelong learning dream today with a world converted into a giant classroom with a few powerful global teachers, and millions of assimilators of information and knowledge packages *via* the Internet. MOOCs and other distance education technologies can promote privatization, reduce public funding, and increase managerial control over academic staff.[22]

It is important, *vis-à-vis* these trends, to recall the primarily the state responsibility of the state in the field of the right to education. When non-state actors operate in this field, the state remains responsible to ensure that their operations are in conformity with the norms and principles of the right to education. Multi-stakeholder partnerships carry potential risks for education to be unduly shaped by corporate interests. The social interest in education is sacrificed for the sake of private benefits gains for providers of educational services. A critical question before policy authorities is to ensure that multi-stakeholders and all public-private partnerships are harnessed to broader public interest, with "strong public institutions" and a "sound regulatory framework."[23]

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21 See John Morgan, "Universities Challenged: the impact of digital technology on teaching and learning, Educational Innovation Position Paper, Universities, 6(2013).

22 Education International: 9th International Conference on Higher Education and Research (10-14 Nov 2014, Brussels, Belgium): Statement on Massive Open Online Courses (MOOCs), *available at:* http://icde.typepad.com/files/ei_policy_statement_moocs_2014.pdf. (last visited on Dec. 23, 2019).

23 Recommendation of the Council on Principles for Public Governance of Public-Private Partnerships, OECD, May 2012.

All providers of education and of digital devices to public authorities through public-private partnerships, whether operating independently or jointly with governments, remain accountable on account of state responsibility for the right to education and learning in any partnerships.This should be kept in forefront in arrangements bringing on board multi-stakeholders and provision of education through public-private partnerships, pretending to bring innovative approaches to education. Such arrangements do not change the nature of the right to education or the state obligations. They should, in all situations, be underpinned by social responsibility in education, where public interest remains predominant.

Social responsibility of enterprises and corporate sector is a widely recognized phenomenon and itshould remain embedded in voluntary and collaborative relationships between various parties, both public and non-public, in which all participants agree "to work together to achieve a common purpose (….)."[24]

Virtual learning sites and fraudulent practices

Both the 'entitlement' and the 'empowerment' as key dimensions of the right to education and learning, mentioned above, are being scuttled by mushrooming of private educational establishments, providing online or distance education. Such providers often operate from locations with no controls at all and offer their own degrees, free from regulation. A large number of private providers operate in various technical areas, such as management, marketing, accountancy and communication, and award diplomas and degrees that are devoid of recognition in terms of equivalence or validity. Multiplicity of learning sites and modes for delivering education and training in a 'virtual learning environment' which exist also comprise many which indulge in fraudulent practices, awarding fake degrees by way of Internet-based education, training and learning, and web portals.Preventing under-qualified or fraudulent providers from trading as universities and from issuing worthless qualifications when the providers are based overseas and operating via the internet[25] is, therefore, a key policy challenge.

An important question is: whether the Internet and various sites which exist and provide for informal learning including possibilities of "self-learning" are reliable and what is the regulatory system with sanctions in case of fraudulent virtual sites? In other words, how public authorities can ensure reliability and fairness as regards the use of digital devices in education and learning, with sanctions and punitive measures in cases of fraudulent practices perpetrated via such devices.

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24 UN General Assembly, *Towards global partnerships: a principle-based approachto enhanced cooperation between the United Nations andall relevant partners* A/R/68/234 (Feb. 7, 2014).

25 John Fielden and N.V.Varghese, "Regulatory Issues" in A New Dynamic: Private Higher Education, World Conference on Higher Education (WCHE) 84-85 (UNESCO 2009).

It is, therefore, of paramount importance to safeguard the right to education from the negative effects of use of digital devices, preserve education as a public good as well as social interest in education while introducing digital devices.State is both guarantor and regulator of education which is a fundamental human right and a public cause. A comprehensive and sound regulatory framework with a system of sanctions is necessary for ensuring that 'edu-business' and fraudulent practices in education have no place in a country's education system. As in Singapore, states should effectively regulate and control privatization in education with broader public interest where acting 'fraudulently or dishonestly' or 'misleading' the public is punishable by law.[26]

VI Overcoming values-crisis

Recourse to ICTs raises a number of other questions as regards the objectives of education and its humanistic mission. "Full development of human personality" is the essential objective of education assigned by the UDHR. It is especially importance to critically look into the detrimental impact of use of digital devices and the internet on the mission of education to bring forth the potential in every human being and nurture and nourish mental and intellectual faculties with focus on human qualities.

In this, special consideration must be given to the crisis in value system as children and youth seem to be lured with materialistic pursuits, devoid of basic human values and ethics. The use of digital technologies in education has also led to more consumer-oriented attitudes in universities and is resulting in the commodification of knowledge and the valuing of information in economic terms rather than for its social and cultural significance. 'Values crisis' is fomented by unbridled use of digital devices and ICTs. Value-based education is being scuttled by materialistic pursuits in education thus engendered and education is being bereft of its humanistic mission.

One must be wary of the deleterious impact of digital devices, vitiating human values with its serious repercussions on education system and society of today and tomorrow. For want of control and regulation of digitalization, multiplicity of learning sites and modes for delivering education and training in a 'virtual learning environment' involve, as mentioned above, fraudulent practices.

Protecting children from the potentially harmful effects of various sites on Internet and risks this carries has become imperative in order to preserve value-based education. Use of ICTs and digital devices must be guided by a humanistic

26 Private Education Act No. 21 (2009) of Singapore provides a laudable example of how states can effectively regulate and control privatization in education with broader public interest where acting 'fraudulently or dishonestly' or 'misleading' the public is punishable by law.

approach.[27] Misuse of technology can lead to cyber bullying, criminal activity and even to terrorism. Educators must prepare their students to face new risks. The risk of sexual abuse or exploitation is most serious. Other serious risks include advertisements, spam and sponsorship, content that is aggressive, violent, hateful, biased, racist, pornographic, unwelcome and misleading.[28] The state must take measures to protect children from online harassment, including bullying or 'grooming' for sexual purposes.

In this context, it is pertinent to note that recently, the French authorities banned the use of mobile phone in classrooms after in was found that a large percentage of adults see pornographic scenes and exchange SMSs in the classroom while the teacher is teaching. As such, the French Minister of National Education considered the use of mobile phone as a "civilizational" treat. There are many other facets of use of ICT's and digital technologies which the fraudulent practices in education.

All these concerns call for critical consideration when one looks at use of ICT's and digital devices in education – in teaching and learning. Are teachers well qualified and trained to guide students in using these technologies? Are contents of education when delivered by way of digital devices and the Internet, respectful of the essential objectives of education and its mission? Availability of well-qualified teachers, skilful in pedagogical methods embedded using digital devices is indispensable before creating infrastructure enabling use of digital devices in schools. Technological innovations result in new digital devices and teachers need to undergo in-service training as well. Moreover, novel pedagogies involve very sophisticated questions, for example, learning analyzes which link data to the cognitive sciences. This also needs 'learning analytics'. Learning analyzes can be mobilized in the service of a tailor-made pedagogy which in turn requires specialized skills and competency in the pedagogical reintegration of high school students or dropouts. In-service teacher training is essential for enabling teachers to acquire necessary competencies and pedagogical skills required for using of digital devices in education. At the same time, teaching personnel must be capable of fostering the essential objective of education and its humanistic mission to ensure that learning modules and contents do not vitiate humanistic mission of education and are not disrespectful of essential objectives of education laid down in the UDHR and in

27 Qingdao Declaration adopted at the International Conference on Information and Communications Technologies and Post-2015 Education, held in Qingdao, China. See http://unesdoc.unesco.org/images/0023/002333/233352E.pdf. See also, UNESCO, Leveraging Information and Communication Technologies to Achieve the Post-2015 Education Goal: Report of the International Conference on ICT and Post-2015 Education 5(2015).

28 See Committee on the Rights of the Child: General Comment No. 13 (2011) on the right of the child to freedom from all forms of violence, para. 31.

international conventions. A key issue is: while promoting the use of ICTs to strengthen access and inclusion in education, how to ensure "realizing the potential of digital technologies within a humanistic framework."[29] In a border perspective, concern is also emerging on ethical questions[30] in artificial intelligence (AI).

Online and web-based learning also leads to deprivation of human interactions in education. These are crucial for imparting human values in teaching and learning.While promoting interactive education software by way of open access digital libraries and new forms of interaction between students, teachers, education employees and the community, integrating such technologies into traditional classroom activities, human interactions should always remain present. Besides, education policies and strategies should take care that these new technologies are best used as supplements to and not replacements for in-class instruction.[31] "Blended learning" using digital devices which brings together formal and non-formal ways of learning requires careful screening. Digital devices and the Internet should not be allowed to overpower and subjugate face-to-face learning and human interactions, nor should recourse to these devices be without careful scrutiny as regards the authenticity of the source of contents.

Digitalizing education in reality may entail several negative consequences.There are a greater proportion of students who are reading less, referencing less and writing with less clarity and boldness. Students rely on the Internet for research material rather than referred course readings. The popularity of Google is facilitating laziness, poor scholarship and compliant thinking.[32]Concern has been articulated regarding the negative impact of digitalization, for example, with respect to network time as "chronic distraction" – "reordering of education institutions in line with the logical network"[33]

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29 *Supra* note 15.

30 Qingdao Declaration: International Conference on ICT and Post-2015 Education. UNESCO, Paris, *available at*: http://unesdoc.unesco.org/images/0023/002333/233352E.pdf. (last visited on Oct. 31, 2109).

31 "Enabling Resolution 2: Using of Information and Communications Technology" adopted at the World Congress, Education International, Ottawa, July 2005, *available at*: https://download.ei-ie.org/Docs/WebDepot/CongReport%20ENG_web.pdf. (last visited on Oct. 14, 2019).

32 Tara Brabazon, "The University of Google: education in the post information age" cited in John Morgan, "Universities Challenged: the impact of digital technology on teaching and learning, Educational Innovation Position Paper, Universities 16 (2013).

33 Cited in John Morgan, "Universities Challenged: the impact of digital technology on teaching and learning, Educational Innovation Position Paper, Universities 18 (2013).

Education and social policy should give special consideration to the need to ward off risks of undermining human values in education consequent upon the use of digital technologies.[34] The internet and digital devices have dehumanizing effect and scuttle students' capacity for 'concentration' and 'contemplation' (…) "How sad it would be, particularly when it comes to the nurturing of our children's minds, if we were to accept without question the idea that 'human elements' are outmoded and dispensable:" 'meditative thinking,' as the very essence of our humanity, might become a victim of this.[35]

34 The Right to Education in a Digital Age, Report by the United Nations Special Rapporteur on the Right to Education, GA/HRC/32/37, (Apr. 6, 2016).

35 Nicholas Carr: "The Shallows: What the Internet Is Doing to Our Brains", 13(2010), page, *available at*: http://www.nicholascarr.com/?page_id=16(last visited on Dec. 31, 2019).