

EDUCATIONAL TECHNOLOGY AND VALUE NEUTRALITY

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Technology is a useful servant but a dangerous master.

Christian Lous Lange

Abstract. *The purpose of this article is to show that the massive quest by governments and stakeholders to integrate technology into education, with little or no consideration for undesirable outcomes, is dangerous because technologies are not value-neutral. The aim of the article is also to encourage social-determinism, in that social and national values determine the choice of educational technology (edtech) to be adapted and integrated. The first section involves a conceptual clarification of edtech. We take the common desire for the use of edtech in developing societies as an indication that it is considered value-neutral. We also present “value-neutrality” as a development that stems from the philosophy of technology, and consider three senses in which technology could be deemed value-neutral. The second section is an analysis of the value-neutrality of edtech in light of these three senses of the term. We note faults with regard to the value-neutrality of edtech, and use the third section to assess the value-ladenness of technology by means of two senses in which it could be considered value-laden. We further explore a way to properly conceive the idea of the value-ladenness of edtech.*

The fourth section contains a positivistic explanation of the three ways in which edtech could be considered value-laden, and a brief suggestion on how best to react to this concept.

We identify that edtech is not value-neutral because it involves elements that are inclined towards moral evaluation. It is instead value-laden, not as a moral agent but as a moral entity with significant influences on human actions and values. Edtech could influence undesirable values in students, and may also change educational and national values.

This paper concerns social developments that are empirically verifiable, with findings and implications that are also pragmatic.

Keywords: *educational technology; value-neutrality; philosophy of technology; national values; value-ladenness; philosophy of education*

Introduction

From the abacus to virtual-teaching apps, educational technology (edtech) has formed an essential part of learning. Edtech is now a growing trend in world societies, and even developing societies are putting an emphasis on integrating technology into education because of the envisaged benefits. Educators and other stakeholders now approach this as being indispensable in helping to achieve excellence in learning. Although the benefits may be clear and achievable, we are critical of this stance because it suggests that edtech is useful for the good and is, more or less, value-neutral. We argue that edtech is not value-neutral, but is a moral entity capable of bringing about both desirable and undesirable outcomes. There is therefore a need for caution in the quest to integrate technology into education.

We present our argument in four sections. The first section involves a conceptual clarification of edtech. We take the common desire for its use in developing societies as an indication that edtech is considered value-neutral. We also present “value-neutrality” as a development that stems from the philosophy of technology, and consider three senses in which technology could be deemed value-neutral. The second section is an analysis of the value-neutrality of edtech in the light of these three senses of the term. We note faults with regard to the value-neutrality of edtech, and use the third section to assess the value-ladenness of technology by means of two senses in which it could be considered value-laden. We further identify a way to properly conceive the value-ladenness of edtech. The fourth section contains a positivistic explanation of the three ways in which edtech could be considered value-laden, and a brief suggestion on how best to react to this concept. These sections are followed by a conclusion.

1. Conceptualising Edtech

Edtech is defined as “the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources”.¹ This definition is a dualistic conception of edtech, in that

1 Richey, R. C. Reflections on the 2008 AECT Definitions of the field. *Tech Trends* 52(1), 2008: 24-25.

it considers it as both a “study” and a “practice”. This means that it is, for one thing, a subject field about the application of technologies for educational purposes. And in addition, it is also the application of technologies for educational purposes. Although this dualistic view of edtech is apparent in many cases, we maintain that this area is not just about the “study” and “practice” of it, but also the “technology” itself. The inclusion of the technology itself as part of edtech develops from a literal identification of “educational technology” as “technology that is educational”. As such, when people talk about ‘edtech’, we can consider the relevant technologies as part of the concept.

The clarification above means that edtech has three ways of being conceived. Firstly, it is a field or discipline that concerns the facilitation of learning and performance improvement through technology. Secondly, it is an activity or practice that facilitates learning and performance improvement through technology. And thirdly, it is a collective term for technologies applicable to the facilitation of learning and the improvement of (academic) performance. The purpose of this clarification is not to only show the various meanings of edtech, but also to inform the reader that the third conception of edtech is central to this paper.

From the abacus to virtual teaching apps, edtech has formed an essential part of learning. Although learning led to the development of technologies, the latter has also been crucial to advancing the former. There is thus an emphasis in developing societies on integrating technology into education to gain the envisaged benefits. Nigeria, like many developing societies, is in a critical stage of technological advancement. The use of technology is viewed as one of the most important tools for modern development, with computer equipments for personal and office use, handsets, projectors, DVDs and TV sets having become common sights. The envisaged benefits are making edtech indispensable for achieving academic excellence. Akinwamide observes that for functional education to take place in the 21st century, teachers must move with the technological world. He believes that technology has reduced the world to a global village, and that no professional can afford to be conservative in this area.² It is an incontestable belief of both government and stakeholders in education that, apart from aiding society, technology is providing lasting solutions to many challenges in the field of education. For this reason, Uzoamaka and Cheta contend that edtech includes the following six uses:

1. The improvement of institutions (qualitative);
2. Learning more about people (quantitative);
3. Learning more about living (research);
4. Reforming the curriculum (substance);
5. Improving the process of teaching and learning (method);
6. Articulating the system (structure and information).³

These six uses indicate that edtech has a significance that encompasses both the educational sector and society –not to mention that education is an integral part of the society.

2 Akinwamide, T. K. Interactions of Learning Style with Cyber-Tasks in Language Learning. *Research in Curriculum Studies* 6(1), 2011: 142-151.

3 Uzoamaka, A. J. and Cheta, W. Educational Technology in Nigeria: Status quo and Visions for the Future. *AFFREVSTECH: An International Journal of Science and Technology* 3(1), 2014: 137.

From the government to academics and other stakeholders, there is a common desire to embrace the modern “*technoculture*”⁴. For example, the Nigerian government advocates the application of technology in all phases of learning and affirms its commitment “to inculcate an attitude of respect for and appreciation of the role of technology in society”.⁵The government identifies that technology is essential for the advancement of knowledge and skills. The status of education in Nigeria, as reflected in many government academic institutions, indicates that the country’s government is nowhere near fully absorbing *technoculture*. At the level of academics and other stakeholders, attempts have been made to draw the attention of government to the benefits that edtech could provide for Nigeria’s education sector. Some have argued that the National Policy for Information Technology is inadequate for influencing the academic use of edtech. The policy has not encouraged the full application of technology to education.⁶ Others have gone beyond the level of criticism to suggest measures that the government could use to increase the presence of *technoculture* in Nigeria’s academic system.⁷Ogunsola and Aboyade affirm that the country’s higher institutions would have global significance if information and communications technology (ICT) became “an institutional priority”.⁸

We believe that the desire for edtech is common in many developing societies, with a general eagerness and commitment to acquire and use technology for educational purposes, and an awareness of the massive benefits this offers. There is also a common desire to replicate the advantages of educational technologies available in advanced societies, and an awareness that edtech is important for effective teaching and productive learning. These attitudes largely suggest that edtech is conceived only in a positive light, as value-neutral.

To understand value-neutrality in the context of this paper, it would be useful to have a glimpse into the philosophy of technology. In the next section, we therefore provide some background information on this subject to help the reader understand the concept of value-neutrality and its relevance to edtech.

1.1. Understanding Value-Neutrality

The philosophy of technology broadly refers to the various applications of philosophical tools to technology and/or inquiry into these applications. Barnard gives an expanded definition of philosophy of technology as being “an approach to contemporary challenges that emphasizes philosophical reflection and critique of technology”.⁹ As

4 Green, L. *Technoculture*. Australia: Allen and Unwin. 2001.

5 National Policy on Education (NPE, Nigeria). Yaba: NERDC, 1998: 42.

6 Yusuf, M. O. Information and Communication Technology and Education: Analyzing the Nigerian National Policy for Information Technology. *International Education Journal* 6(3), 2005: 316-321.

7 Uzoamaka, A. J. and Cheta, W., *supra* note 3.

8 Ogunsola, I. A. and Aboyade, W. A. “Information and Communication Technology in Nigeria: Revolution or Evolution.” *Journal of Social Science* 11(1), 2005: 13-14.

9 Barnard, A. Philosophy of Technology and Nursing. *Nursing Philosophy* 3, 2002: 16.

such, the term includes, and goes beyond, conceptual or normative engagement with the technology itself, its usage or non-usage, and other issues involving the technology. The philosophy of technology could include looking at technical issues such as the design of flash drives, as well as social issues such as the significance of *Turnitin* on students' reading habits. The pervasive nature of the field prompted Mitcham to identify two versions of this philosophy. One is the "engineering version", which is largely about the technology itself, and its technique and functionality. This "engineering philosophy of technology" presents technology in the instrumental sense (that is, as a tool).¹⁰ The second version is the "humanities philosophy of technology", which goes beyond considering the instrumental nature of technology to include the significance of technology in society.¹¹

It is in the distinction between these engineering and humanities versions of the philosophy that we have value-neutrality, especially under the latter. The connections between technology and society stimulate ethical reactions to technology. In fact, in terms of the humanities version of the philosophy, ethical questions and social concerns about technology come to the fore. An example of this is a piece of technology designed to crack nuts that becomes useful for thieves in breaking into jewellery boxes. This could raise ethical questions about the use of the nutcracker, which is now also a tool for negative purposes. Without it, the jewellery box might be safe – and the thieves may be motivated to break into the box because of the nutcracker's availability. This implies that the nutcracker has not only been used for theft, but also facilitates theft. So is the nutcracker good or evil? To what extent is it morally responsible for the theft? These types of question develop when a technology – in this case, the nutcracker – is active in society.

As with many philosophical questions, various perspectives can be adopted to answer ethical questions about technology. Using the nutcracker analogy, one perspective could focus on the technology itself: in other words, the nutcracker could be considered morally insensitive, as a mere tool that is not responsible for the theft. Another perspective could view the tool as morally sensitive, but place moral responsibility on the nutcracker's maker. The maker could perceive the potential for negative use of her product and take steps to dissuade it; she is having responsibility for the morality of the nutcracker's "actions". Another perspective could regard the thieves as morally responsible for and guilty of the theft. The first perspective, however, reflects the notion of value-neutrality that is relevant to this paper.

We can cautiously claim that value-neutrality mainly affirms the amorality of technology. Sundström provides "three senses" in which we can conceive value-neutrality, namely:

1. Neutrality of ambiguity;
2. Neutrality of inaction;
3. Neutrality by inheritance.¹²

10 Mitcham, C. *Thinking through Technology: the path between engineering and philosophy*. Chicago: University of Chicago Press, 1994: 62.

11 Ibid., 63.

12 Sundström, P. Interpreting the notion that Technology is Value Neutral. *Medicine, Health Care and Philosophy* 1, 1998:42-44.

Under the concept of neutrality of ambiguity, a technology is morally neutral because it could be used to achieve any end. For example, the nutcracker's design (such as hard jaws and rugged structure) may enable it to grasp the lock of the jewellery box and separate it in a twist. A further implication is that technology cannot restrict usage to the designated purpose. It is just useful in the manner of its application, notwithstanding the resulting moral consequences.

A technology is neutral in the second sense if it is not in use – in other words, it has no moral implication because it is inactive. Sundström uses a gun analogy to explain this point.¹³ A gun is by design a tool for wounding and killing, and the evil associated with such a purpose could support the conclusion that the gun is evil. Although this may be true, it is also true that a gun not in use is, at that particular moment, harmless and not evil. As long as the gun is inactive, it is value-neutral.

In the third sense, a technology is value-neutral because it develops from a natural principle or scientific mechanism without moral significance. Take for instance, a digital calculator designed on the principle of numerical algorithms (such as addition and subtraction), an idea that clearly has no inherent evil. The calculator is thereby value-neutral because it inherits the neutrality of the scientific principle behind its functionality. However, it is not certain whether one could pursue neutrality by inheritance to a more technical extent. In the case of a solar-powered aircraft used to bomb innocent civilians, would the aircraft inherit the sun's innocence? This may signal the potential limits of neutrality that we will see later in this paper.

Notwithstanding the potential challenges, we have now seen three senses for conceiving value-neutrality. Our focus now is on whether (and how) edtech is value-neutral.

2. The Value-Neutrality of Edtech

The value-neutrality of edtech has not received direct defence or denial in popular discussions on the topic. Using Nigeria as an example, there has been little or no attention given to this. We only make derivations from the common focus on the benefits of edtech that there is an implicit confirmation of its value-neutrality. At both governmental and non-governmental levels, edtech is seen from a positive perspective. There is a focus on its advantages, with little, if any, concern for possible disadvantages. It appears that for government and stakeholders in education, edtech is value-neutral. We can also support the conclusion here through a curricular approach to edtech. Educational Technology is a year three corecourse for undergraduate students in the School of Education at the National Open University of Nigeria.¹⁴ None of the 17 topics in the course guide include “technological ethics” or ethical implications of edtech, thus further attesting that it is considered value-neutral.

13 Sundström, P., *supra* note 12, 43.

14 The National Open University is a national higher institution of learning under the auspices of the Federal Government of Nigeria.

The value-neutrality of edtech identified here develops from a *means-end* approach to technologies in general. As we have seen earlier, there has been a large amount of focus on the positive outcomes that can be derived from edtech, which appears to be a particular way to achieve some goals. There is thus an emphasis on defining these goals (end) and how to achieve them (means). For example, there is a goal of making academic resources available to students: how do we achieve this? We could provide internet-enabled tablets on which students can surf the World Wide Web and examine electronic books to increase their knowledge. Under the means-end approach, edtech takes technology as being instrumental, in that it is a tool to accomplish certain objectives. In terms of the objectives, it can be used for bad or good ones.¹⁵ If the application of technology has negative outcomes, the users are culpable and not the technology itself. In the case of students with internet-enabled devices, if some use these to chat on social media rather than study, they rather than the devices would be responsible for their actions. Here we see the neutrality of ambiguity: the devices can serve any purpose the user desires. An adept user could tweak a piece of technology for other purposes outside the scope of its design. In this context, the technology is value-neutral because it is innocent and has no responsibility for the consequences of such use.

The value-neutrality of edtech is also possible in the second sense of neutrality. Imagine that some dishonest researchers developed software that could enable access to the database of Oxford journals without a subscription. Although such software would be designed with a criminal intent, giving it a negative purpose, it would still be value-neutral when not in use: this is what we have seen earlier as neutrality of inaction. Because the essence of technology is derived from its use, it is difficult to sustain this type of neutrality. Technology must be put to use, at which time the neutrality of inaction becomes irrelevant. Sundström acknowledges the temporary nature of such neutrality. A piece of technology, *ceteris paribus*, will often be in action, but there is still an element of neutrality when it is inactive – and Sundström calls this “residual neutrality”.¹⁶ Thus, even technology that receives minimal use can be value-neutral.

Neutrality by inheritance seems relevant to edtech in general. Most technologies used in education are designed based on scientific principles that are naturally value-neutral. For example, an arithmetic algorithm by which a calculator works does not portray any evil or harm whatsoever. This would make the calculator value-neutral as edtech, because of its dependence on neutral principles of arithmetic.

Note that our purpose here is not to explore the varieties of value-neutrality, but to acquaint the reader with the relevance of value-neutrality to edtech. The purpose is to reiterate that such value-neutrality is an outcome of the instrumental conception of technology – meaning that technological objects in education are structures and tools aimed towards a certain end. We will use the next section to see the extent to which edtech can be value-neutral.

15 Pitt, J. C. *Thinking about Technology: Foundations of the Philosophy of Technology*. New York: Seven Bridges Press. 2000.

16 Sundström, P., *supra* note 12, 43.

2.1. Rejecting the Value-Neutrality of Edtech

The argument for value-neutrality seems appealing and reasonable to a certain extent. However, it appears that the denial of the concept is not far-fetched, and (educational) technology may to some measure be perceived as not being value-neutral. Note that along with the (implicit) acceptance of the value-neutrality of technology, the government and stakeholders emphasise the significant impact of technology in education. In Section 1, we show that the quest for edtech is associated with the potential advantages. This is a kind of technological determinism, which sees development in the education sector being very much driven by edtech and is a term that refers to technology having a causal and deterministic influence on our society.¹⁷ There are implications from this determinism that are tantamount to denying the value-neutrality of edtech. The following analogy should help make this clearer.

Imagine that school A has some audiovisual materials to complement its lessons. Later, school A wins an interschool competition against school B, at which students have no technology to complement their lessons. Some people would certainly consider the audiovisual materials as having a great influence on the success of school A. In other words, there would be a technological determinism behind school A's success against school B, and we could say that technology is responsible for the achievement. School B may even want to acquire such technology because it believes that this plays a positive part in academic performance. The analogy provided here reflects Barnard's view that "Technology can be sensitive to the needs of society and cultural groups..."¹⁸

This belief in the influential power of technology signals that there are elements of responsibility, functionality and (goal) achievement in technology. The relationship of technology to responsibility and functionality makes it difficult to affirm its value-neutrality.¹⁹ From this perspective, technology seems to be like human beings having responsibilities and functions, which are prone to moral evaluations. If actions or impacts are inclined to moral assessment, then we may not be making an *anthropomorphic fallacy* to say that technology is not value-neutral, but value-laden.

3. The Value-Ladenness of Edtech

The concept of the value-ladenness of edtech refers to the view that edtech could promote a certain set of values. Put simply, though cautiously, technology could make things, people and events good or bad. Having seen the link between (educational) technology and value, we will now consider the sense in which such technology could be considered value-laden. There are numerous approaches to presenting this idea. For our purposes, we broadly categorise two versions of it: the "moral agency claim" and "non-moral agency claim".

17 Dusek, V. *Philosophy of Technology: An Introduction*. Oxford: Blackwell Publishing. 2006: 84.

18 Barnard, A., *supra* note 9, 22.

19 Maarten, F., Lokhorst G. and Poel I. "Philosophy of Technology." *Stanford Encyclopaedia of Philosophy*. 2013.[interactive] [accessed 2016-08-13] <<http://plato.stanford.edu/entries/technology>>

Advocates of the moral agency claim consider technology to be a moral agent, meaning that technologies can “act” freely in a “moral sense” and have moral responsibilities for their actions.²⁰ The arguments for this concept extend from computers to the level of connecting the moral agency of technology with human freedom and responsibility.²¹ According to the idea of moral agency, technologies are artificial moral agents with actions inclined to moral appraisal.²² This implies that technologies not only carry out actions, but also that these actions could be morally *assessed*.

Non-moral agency is the view that the value-ladenness of technology is not in terms of moral agency, with technologies not acting as moral agents (like human beings do). Rather, a technology is value-laden because it has a “value system”: it can influence actions, and also has effects on “moral patients”.²³ According to the non-moral agency claim, technology cannot be considered a moral agent because it cannot act without human intervention (either before or during a particular action), or reflect on or predict the consequences of its action. Even automated technologies cannot change their forms of action because of moral considerations. They are designed to *act* and their actions are not voluntary, but are instead based on human designs and/or configurations. These actions are therefore not free from moral assessment.

3.1. Moral Agency or Non-Moral Agency?

Having seen two ways in which a technology can be considered value-laden, our focus is now on identifying the possible ways in which edtech is value-laden. Does this apply to it under the moral agency claim, the non-moral agency claim, or both? We begin this inquiry by looking at the moral agency claim.

We consider it difficult to conceive the value-ladenness of edtech from the perspective of moral agency. One reason is that most technological objects used in education depend on human influences to carry out their functions, meaning that edtech may be considered to have only “residual value-ladenness”, with the greater part of the value-ladenness attached to the technology’s maker or user. To consider edtech as a (free) moral agent would thus make it difficult to explain the moral agency of the maker (that is, the human being). Another reason is that value-ladenness in the realm of edtech differs from that in the human situation, even in the context of autonomous technology. In the human situation, some requirements need to be considered before passing moral judgement on a person’s actions (particularly in terms of the matter of guilt or innocence). To pass this type of judgement often involves assurances that the actor is in their right mind, free from various influences (such as alcohol or a certain threat) and fully aware of the consequences of their actions, with the freedom to act otherwise. If these conditions are

20 Maarten, F., Lokhorst, G. and Poel, I., *supra* note 19.

21 Varieties of this view are present in the works of Bechtel 1985, Dennett 1997, and Verbeek, 2011.

22 Floridi, L. and Sanders, J. On the Morality of Artificial Agents. *Minds and Machines*. 14(3), 2004: 349-379.

23 Scholars holding this position include Whelchel, 1986, Maarten *et al*, 2013, Johnson, 2006.

satisfied, the actor is a moral agent who deserves moral judgement. Technologies used in education carry out actions, and we earlier noted their potential for and influence on learning and teaching. However, we cannot assess their actions in the light of the above conditions. For example, a computer (as with other technologies) “acts” under human influences and is neither conscious of its actions nor could act otherwise. We cannot therefore apply a moral judgement to this in the same way as we can to the human situation. Our view is that either technologies are not moral agents or their moral agency is elusive in human terms.

We therefore now have only the non-moral agency claim to verify the value-ladenness of edtech. Recall that the non-moral agency claim involves a rejection of moral agency for technology, and considers things from another perspective. To examine the value-ladenness of edtech under the non-moral agency claim in the next section, we follow the viewpoint of Johnson on the value-ladenness of computer systems.²⁴

3.2. Non-Moral Agency and the Value-Ladenness of Edtech

Johnson argues that technologies are not moral agents, but they are not morally neutral. According to her, technologies cannot fully meet the “requirements of the traditional account of moral agency” because they lack internal states such as “beliefs and desires”.²⁵ In addition, Johnson contends that technologies have intentionality, but in the sense of their functionality rather than in terms of carrying out deliberate actions.²⁶ She uses a “search engine” analogy, in which a search engine is designed to receive certain inputs and provide outputs in response to them.²⁷ The intentionality of the search engine, as with technologies in general, is based on its functionality (that is, receiving inputs and providing outputs) and is connected to the intentionality of the user and maker. Through their functionality, Johnson argues, technologies (specifically computer systems) affect the world’s moral condition and the ways in which people act.²⁸ Her argument is therefore that technologies are not moral agents, but that their influences on the moral world through their existence and actions qualify them as moral entities.

Taking the factors described into account, we consider edtech [in the plural sense] as moral entities. Such technologies lack beliefs or desires and mental properties like those of humans, but have significant influences on people’s actions as teachers or students. For example, the use of interactive whiteboards could create friendly relationships between teachers and students to ease the acquisition of knowledge, and make teachers alert to any learning difficulties. They might also aid the attentiveness of students and help them remember the contents of lessons. In this case, we have technology influencing

24 Johnson, G. Computer Systems: Moral Entities but not Moral Agents. *Ethics and Information Technology* 8, 2006: 195-204.

25 Johnson, G., supra note 24, 198.

26 Ibid., 201.

27 Ibid.

28 Ibid., 202.

the classroom setting and the actions of teachers and students. The link between edtech and morality comes in the sense that the actions influenced in these people are prone to moral evaluation. As such, edtech is not value-neutral.

4. Tripartite Identification of the Value-Ladenness of Edtech

Our stance is that edtech is value-laden, as a moral entity that has an influence on values in many ways. As a moral entity, edtech has the potential, among other things, to: (i) influence certain values in students; (ii) change educational values in undesirable ways; and (iii) change national values. We shed light on these three areas here.

4.1. Influencing Values in Students

First, edtech can promote certain values in users (that is, teachers and students) that differ from the purpose of its design or are even beyond users' expectations. As shown earlier, moves towards educational technologies are focused on the advantages that they can provide. We agree that the application of technology to education may result in the emergence of the envisaged advantages, but there could also be some undesirable outcomes. For example, the US-based organisation *One Laptop per Child* donated laptops to pupils at a primary school in Abuja to aid learning. However, this almost became regrettable because the pupils used the laptops to browse adult content on the internet, in contrast with the organisation's purpose.²⁹ It was thus clear that edtech could turn innocent pupils into pornography victims instead of just having the envisaged benefits. This provides empirical support for our view that edtech is a moral entity capable of influencing undesirable values in students.

Apart from exposure to pornographic content, edtech (such as internet-enabled devices) could expose students to online radicalisation by enabling them to connect with online predators that are poised to initiate students into extreme ideologies and lifestyles that could be dangerous for them. It has been identified that the availability of the internet and freedom, particularly in the form of social media, creates opportunities for extreme groups and individuals to connect with youths (students) and radicalise them.³⁰ Note that this includes terrorist recruitment and training via the internet.³¹ If technology can influence cybercrime, then there is reason for developing societies to carefully reconsider their urge for edtech. Some have predicted that cybercrime represents Africa's next big threat,³² which seems a certainty going by current trends with regard to internet fraud and e-theft. The desirability of edtech prevents many developing societies from realising

29 See Reuters. *Nigeria Pupils browse porn on donated laptops*. 2007.[interactive] [accessed 2016-08-13] <<http://uk.mobile.reuters.com/article/idUKL1966647020070719>>

30 Omotoyinbo, F. R. Online Radicalization: the net or the netizen. *Social Technologies* 4 (1), 2014: 54.

31 Ibid., 55.

32 Oladipo, T. BBC: Cyber-crime is Africa's next big threat, experts warn. 2015.[interactive] [accessed 2015-11-20] <<http://bbc.com/news/world-africa-34830724>>

that cyberspace is becoming the “fifth domain” of military operations alongside land, sea, air and space.³³ It is unlikely that military personnel would be successful against people with long-term access to harmful training through edtech.

4.2. Distorting Educational Values

The value-ladenness of edtech means that such technology can not only influence certain values in students, but it can also change the educational values of a nation. In Nigeria, for example, there is an emphasis on using education to instil social norms right from early childhood, with the philosophy and goal of education starting with “citizenship education”³⁴. National goals in this area strongly include engendering the right types of value and norm for the survival of the individual and Nigerian society.³⁵ We consider educational values to include confidence, creativity, dignity, excellence, productivity and self-determination. For many reasons, it has been difficult to identify some of these in Nigeria’s current educational system, but we argue that edtech could engender total eradication of these values from the country’s education system. We consider this possibility from two perspectives.

From one perspective, it is no news that technology could cause a distraction for students.³⁶ In advanced societies, students may be distracted by the fun aspects of the device or the technological mechanism applied for teaching and learning. They might be more interested in the games, chat functions and forums available as extracurricular parts of edtech, and this could lead to poor academic performance. In a developing society, it is likely that the technology itself would distract students, being a new approach to learning. It is even possible that teachers could unconsciously focus on teaching the students how to use technology for learning rather than on learning itself. It would be like teaching technology rather than the subjects to students. After adapting to *technoculture*, students may be distracted by other types of content and opportunities presented by edtech. In this atmosphere of distraction, it is uncertain whether educational values could be maintained.

From another perspective, edtech could change educational values once the technology becomes much more integrated into the activities of students. Over time, they may become dependent on it for almost any academic task, and could lose self-confidence as they become addicted to it not only for aiding memory, but also for improving their success. In this way, edtech could encourage cheating and malpractice by students in examinations. To some extent, this technology could also lead to a decline in the intelligence quotient (IQ) of students, with an overdependence on it initiating a significant reduction in the use of their brains for academic exercises. Artificial intelligence can in this way be

33 Schmidt, E. and Cohen, J. *The New Digital Age: Reshaping the Future of People, Nations and Business*. London: John Murray. 2013: 109.

34 National Policy on Education, *supra* note 5, 11, 14.

35 *Ibid.*, 7, 8.

36 Kyle, R. Getting real about Educational Technology. *Education Week* 33 (1), 2013.

seen as replacing human intelligence, potentially hindering the possibility of producing confident, creative, excellent and productive students for the society.

4.3. Corrupting National Values

Edtech could change national values by influencing the acquisition of values that are not only foreign, but are also contrary to the nation's objectives. Among the values intrinsic to the African setting are respect, honesty, family ties and peaceful co-existence. It is true that colonialism and slavery have distorted many of these values, but it is possible that edtech could perpetuate any distortion in more volatile ways. There is no contradiction that exposure to edtech could lead the young to adopt dangerous habits that they deem modern. Today, a younger generation under the spell of technological exposure finds it difficult to respect elders in a culturally acceptable manner. Developing societies are yet to fully integrate technology, but already face issues with regard to cybercrime, e-fraud and other technology-related immoralities. Honesty is on the wane, with members of the younger generation active in cheating and making a living from ignorant individuals. Edtech is also capable of making students iconoclastic to their traditions. The availability of such technology gives students in developing societies connections with online models. As a result, dressing cultures are wildly modern, and it seems that teachers are becoming prey to the provocative appearances of students. In addition, edtech could influence a *technoculture* in which students, and even some teachers, are becoming addicted to social media. We believe this might damage the "family ties" that form an important part of national values, with such addiction leading to a widening communication gap between family members. Because children may consider parents to be amateurs or technologically uninformed, they might prefer to share their concerns with *e-quaintances* – in other words, with strangers on social media rather than their families. In some urban areas of Nigeria, the situation goes beyond communication gaps. Many contemporary marriages or homes are the products of online dating and other forms of *e-relationship*. The quest for technology overshadows critical inquiry into its impacts in some advanced societies where there is an increase in divorce rates and a desire for cohabitation rather than marital conjugation. It does not seem to be taken into consideration that the prospective technologies are designed in, and for, certain societies with their own particular values. The acquisition of these could result in the infusion of unfamiliar values, to the detriment of national ones.

4.4. An Appropriate Reaction

Our discussion so far is majorly critical of edtech, and the reader may consider our argument to be a proclamation of *technophobia*.³⁷ This is not at all the case. We understand that technology is at the core of modern human civilisation and would not argue against its significant benefits. And our paper would, for example, not be

37 Technophobia roughly means anxiety about the effects of technology.

available for the public if there were no edtech. Our position is, however, that technology (including edtech) is dynamic and that there should be a cautious *technoculture*. It is therefore myopic to approach technology from a perspective that emphasises only the benefits and considers it to be value-neutral. Such a view point could foster the broad acquisition and use of technology for educational purposes without consideration of its applicability or potential outcomes.

There may be cogent retorts against our view that edtech is not value-neutral, but we maintain that it is beneficial to consider it as value-laden. We agree with the perspective of Surry and Baker that, “technology should not be viewed as value neutral but as the embodiment of a complex system of political, social, economic, and technical priorities and philosophical stances”.³⁸ This stance would help us not only to consider edtech as being sensitive to social needs, but also to perceive that social needs should determine our approach to edtech. Sceptics of our view point may consider it economically unreasonable for developing societies to *domesticate*³⁹edtech. We argue, however, that the domestication of edtech could increase the employment rate and even help to avoid the outlay of money and resources to combat any problems incurred by such technology. The principle of a developing society towards edtech should therefore be more of *social determinism*, meaning that social needs and values come first during the acquisition, adaptation and use of technology for educational purposes.

The Osun state of Nigeria is a good example here. In that area, e-learning tablets (Opon-imo) have been provided to help develop the ICT skills of students in public secondary schools. An important point is that the tablets are internet-disabled to deter undesirable outcomes (such as the viewing of pornographic materials or engagement with social media).⁴⁰ We consider this as worthy of emulation, though not in every academic context.

Our suggestion with regard to the value-ladenness of edtech is that developing societies should be cautious in their quest for such technology. It is beneficial to start on this journey by first creating a platform that involves experts such as psychologists, *edupreneurs*, educational technologists, social scientists and professional educators for the identification and avoidance of negative outcomes. Surry and Baker suggest that experts (particularly learning technologists) should “try to anticipate and account for the unintended consequences of a new technology and ensure that the core values of any learning organization [learning community] are not compromised during the process of technological expansion and progress”.⁴¹ Although we do not consider the nature of a platform here, we believe that its development would help developing societies to manage the influence of edtech on values only to a very desirable extent.

38 Surry, W. D. and Baker III, F. W. The Co-dependent Relationship of Technology and Communities. *British Journal of Educational Technology*. 2016, 47(1):13-28.

39 The domestication of edtech refers to the development of such technology in a way that promotes desirable educational and national values that are integral in specific contexts.

40 See School Computer Tablet (Opon Imo). [interactive] [Accessed 2016-11-20]. <<http://osun.gov.ng/education/opon-imo>>

41 Surry, W. D. and Baker III, F. W., *supra* note 38, p. 14.

Conclusions

Technology is an indispensable part of modern human life, especially in teaching and learning. But despite its allure, we argue that it could lead to undesirable consequences because it is not value-neutral. We have shown that the integration of technology into education could give rise to the development of undesirable values in students, and may change both educational and national values. It is therefore necessary to consider possible outcomes before adapting and integrating technology into our academic system. Apart from considerations within educational establishments themselves, researchers in education and similar fields should give attention to the acquisition, adaptation and use of technologies for educational purposes. This would help the government to note and avoid the potential negative aspects of edtech, as well as make pragmatic decisions and actions that enable such technology to promote desirable values in students and other users.

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ŠVIETIMO TECHNOLOGIJOS IR VERTĖS NEUTRALUMAS

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Santrauka. Šiame straipsnyje išskelėme tikslą apžvelgti plačias pastangas, dedamas valstybinių ir kitų suinteresuotųjų grupių į technologijų diegimą švietime, beveik nesusimąsiant apie nepageidaujamas pasekmes. Tokia situacija – pavojinga, nes technologijos nėra vertybiškai neutralios. Siekiama paskatinti socialinį determinizmą, tikint, kad socialinės ir nacionalinės vertybės nulems švietimo technologijų (angl. edtech) diegimą. Pirmoje dalyje konceptualiai apžvelgiame švietimo technologijas. Darome prielaidą, jog visoms besivystančioms šalims būdingas siekis diegti švietimo technologijas, nes tikima, jog jose neužkoduotas vertybiškumas. Manome, jog „vertybinis neutralumas“ kyla iš technologijų filosofijos ir aprėpia tris technologijų neutralumo aspektus. Antroje dalyje vertybinis neutralumas apžvelgiamas šių trijų aspektų kryptimis. Aptariame edukacinių technologijų vertybinį neutralumą ir trečioje dalyje įvertiname vertybinį technologijų sodrumą. Išryškinami ir plačiau aptariami du vertybiniai sodrumo aspektai. Ketvirtoje dalyje, remiantis pozityvistiniu metodu, pateikiami trys švietimo technologijų vertybinio sodrumo bruožai ir trumpai aprašomos rekomendacijos dėl edukacinių technologijų vertybiškumo valdymo.

Įrodome, jog edukacinės technologijos nėra vertybiškai neutralios, nes jų funkcijose yra moralinių vertinimų nuostatos. Vertybinis sodrumas jas apibūdina ne kaip moralinį subjektą, bet kaip moralinį objektą, stipriai nulemiantį žmogiškuosius veiksmus ir vertybes. Edukacinės technologijos gali skatinti nepageidautinus studentų veiksmus, jos gali lemti ir keisti švietimo ir nacionalines vertybes.

Šiame straipsnyje aptariami socialiniai pokyčiai, kuriuos galima stebėti empiriškai. Pateikiami pragmatiniai apibendrinimai ir rekomendacijos.

Reikšminiai žodžiai: švietimo technologijos, vertybinis neutralumas, technologijų filosofija, nacionalinės vertybės, vertybinis sodrumas, švietimo filosofija.

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