Educational Technology for Equality: A Review

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

Review Article

ABSTRACT

The use of technology in education should focus on treating students at all levels of education in the same manner, resulting in a change in the teaching and learning process and better learning outcomes for qualitative change in education. The study used Google Scholar for scanning and getting the information. This study seeks to scan factors associated with educational technology for equality. The review selected papers from 2014, 2017, 2019, 2020, and 2021. The selected papers are based on educational technologies for equality in elementary, primary, secondary, and tertiary education.

The paper found that there is a need to make sure that everyone has the possibility to access technology, regardless of their disability. The paper suggests that education technology needs to consider equality in terms of gender, race, disability, language, social, and economic status, as well as academic hierarchy. These parameters need to be checked in order to have equality in the use of technology. The success of that will lead to a paradigm shift in education in all sectors, starting at the root of education.

The papers recommend that the government make policies about educational technology in all of the education systems, from the root of education to higher education. The application of technology to all foundations of education will lead to sustainable development in education.

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1. INTRODUCTION

Equality is the broader terminologies which mean treating all human beings in equal way. This treatment should focus to all people regardless of their differences in age, gender, social and economic status. Education is the knowledge acquired by the human being formal, informal and none formally. Technology facilitates teaching and learning. The uses of computers, laptop, mobile phones and assertive tools support learning process. Teacher uses technology to prepare instructional materials. Students and teachers engage in learning as well as interact with the technology. In academic career teachers and faculties interact well through technology. Educational technology is the broader term which specifically means the uses of technologies in education [1]. To support the idea educational technology facilitates teaching and learning through proper and suitable technological staffs and processes. The uses of network computers, mobile, and virtual activities. Software and hard ware devices as well as human resources included in educational technology [1].

All of these requirements need to be met in an equal way among the students and teachers at the schools, offices, and institutions. If there is a meeting, it will set a great foundation in educational technology for equality and learning, which will be for sustainable development.

On the same vein, teachers need to smooth learners' engagement in the classroom along educational technology [2]. Teachers are supposed to be in the classroom to assist students on how to use computers, audio and visual materials in the classroom. The facilitator needs to ensure that students can participate in the classroom where by the big interaction need to be between students and technology. Turning to the study on data mining in relation to educational technology which done in the classroom research contribute to the important of understanding students' interactions with technology rather than to a teacher [3]. There is need for learning to pay attention on differences in learners learning experiences to employ equality in technology. To support the idea on educational technology the review will be guides by the following questions;

- What are the parameters of educational technology for equality?
- Is there equality in educational technology according the specific parameters?
- How can a paradigm shift in education be successful?

2. LITERATURE REVIEW

2.1 Gender Equality

Gender equality in the use of technologies proves that women have been isolated in the use of ICT's. Formal education should focus on alleviate gender violence and stereotype in the uses if ICT. The uses of Web 2.0 and Science, Technology, Engineering and Mathematics (STEM) should consider female [4]. This insists that female interact with technology in education will lead to success in equality in educational technology. For a long time, males have been labeled as the ones who can access technology like taking science, Technology, Engineering and Mathematics subjects. This notion is still ruining the access of female to technologies. In the same vein, the study aimed to explore the rate of publications between male and female concern the use of educational technology has found out that, women publish less than men [5]. This may be due to little number of women who can access technology and the level of education. The reason for that is that the high number of women does not go for higher studies rather, they end up at lower level of education [6]. The large number of male students at high studies also is the barricade in access computer for girls. Female cannot have the equal approach to computer lab at secondary schools due to earlier deadline hours and domestic responsibilities that terminate their access time to technologies. There is an important task for them to care of the responsibilities for women so that they can get in interaction with technologies as male. On support of the idea [7] conducted a study at Afghanistan on accessing technologies for men and women. The findings acknowledged that male as well as female students can access educational technology equally only if the parameters will be taken into consideration [7]. To cement up, in academic institutions the status is that there is need for availability of resources, collaboration among teachers, in working. This collaboration will automatically build strength to women and girls towards the uses of technologies in education [8].

2.2 Race

In the study of sociological research on the relationship between race/ethnic and educational inequalities. The investigation reported that,

there is need of having diversity in education [9]. Globalization and neo-liberalism need to be encountered. It is necessary for accountability where it affects education in different nation. To support the idea the investigation done at Brazil about race and ethnic inequalities in education point out racism and school discrimination as the problem in approaching education. The race discrimination between white and non-white can hinder the individual or students to attain higher education [10]. The system can also affect students in what kind of teaching materials and classroom observation to be used. This proves that the non-white cannot access the technology like white in education. The study recommends government to fund the entire race where by the basic priority to be on promoting the African Brazilian to access higher education regardless of their color.

2.3 Disability

In the investigation on Learning technology and disability which was done from 15 countries to discuss about disabilities and the matter of accessing technologies in education. The findings indicated lack of funds and information that brings nonsuccess to disabled people to get gain into technologies in education process [11]. The studies suggest that there is the need of increasing the assistive technologies. This will help disabled people to get in touch with learning through Braille machines, magnifiers, screen reading and large print materials. The availability of personal assistance to mentor disabled on how to use technologies. To support the idea the review on disability and technology accessibility recommends that, the disable learners do not have equal access to technologies in education [12]. The study concludes that technologies accessibility in education is needed to disabled students and should be accessed equally even at K-12 schools at United States. The work on rethinking disability counted that there is the need of putting technology in inclusive classroom [13]. The technologies needed to be equal to the students with disabilities as well as support from the families and students. In the same vein, the study on assistive technology for blind students conducted in Delhi pinpoint out that, Teachers need to support and encourage students with visual disabilities on how to use assistive technology rather than tactile base [14]. The use of Braille books, slate and stylus need to be familiar to students and available at schools and institutions. This will make the equality on how to access technology in education.

2.4 Language

In any education process language matters for making students understand and grasp the knowledge. English language is a global language, official language and language of technologies. Apart from that English language still occupy the highest rank for running education activities in the World including the countries which English is second language, third language as well as foreign language. Most of the Teachers and students are not good in use English for communication and for technologies like computers, having meeting through zoom, conferences as well as in research activities and classroom activities for teachers. In the same vein, [15] comments "the language of equality is not foreign, nor is it reserved for the privileged classes; equality is a human right afforded to every person around the world". Language equality is still a myth to students who are ELLs (English Language Learners whereby they meet English language as the medium of instruction and communication at school. These learners use another language at home and at primary school. This will be difficult for them to cope with the uses of English language in education. To support this, National Center of Educational Statistics prove that 4.9 million students were ELL in 2015 while conclude to have 9.9% in public schools. Hispanic 3.8 million of 4.8million, while Asian made up 511,700 [16]. This shows that language can hinder the equality of accessing technology in education. Additionally English language used widely to take online classes as well as in publications. Adult's learners and ELL not access technology in a proper way or at all. Students who get in touch with language can access education through the use of technologies like mobile phones and computers, [17]. The investigation on students' language preferences for disabled students relate with communication at UK higher education institutions agree with the need of consider language for disabled students rather than relying on single model of language [18]. This will make students to understand well in learning and it will make the paradigm to shift together in education.

2.5 Socio and Economic Status

The students who receive government support get low access to technologies compared to students who are being supported by their families [19]. The presence of students from low, medium and higher social economic status lead

to inequality to access technologies. The fact is the students from poor families cannot afford to own computer, tablet and training on how to use them. Students from medium families can afford to have a computer, mobile phone, and tablet and cannot manage to have enough data for everyday use. The students from rich family can manage to have computers and tablet and access technologies well more than those students from poor and medium families. This is also applicable to teachers and faculties from low and medium families can afford to have the equipment but not maintain to have data for browsing some information. Teachers depend too much on WIFI at working office rather than having their own data for browsing. To support the idea the review on impact of Covid 19 in developing countries where by all of the universities and schools were closed [20]. Students were supposed to attend class from home only as it was total lockdown. The students were supposed to buy computers, tablet and mobile for taking the class. Parents and students from poor families faced some difficulties and failures to manage the cost and buy computer for accessing classes. Students also face the network and technical problems. This makes students not to access the technologies equally like other students from high families who were able to access learning from home, with full equipment's as well as data from searching materials and attending the class.

2.6 Academic Hierarchy

The study conducted on uses of technologies in education where by professors were regarded as the one who use technologies more in teaching and learning as well as in research activities rather than students and other faculties [21]. The uses of technologies include Face book and YouTube. This proves that there is unequal access of education technologies among professors, faculties, teachers from secondary schools as well as from primary schools. On the same idea the quantitative investigation about digital competences to students, graduates and professors in education point out that training, level of competence and attitudes towards the use of digital technologies in education will determine the equality in education technology [21]. The difference in attitudes towards the interaction with technologies among the professors, teachers, faculties and graduates led to inequality of accessing educational technologies. There is the need to have the positive and same attitude towards the use of

technologies at institutions. This will lead to equality in educational technology.

2.7 Methods

The study scanned and obtained information from Google Scholar. Papers from 2014, 2017, 2019, 2020, and 2021 were chosen for the review. The articles chosen are about educational technologies for equity in elementary, primary, secondary, and higher education.

3. RESULTS OF THE STUDY

The results after the analysis and assessment of the study by the different research scholars and from the website are as follows:

First, we still need to rework it again and again for equality in educational technology in most of the parameters. Results indicated that there is no equality in educational technology. Therefore, it is necessary to consider gender equality regarding the uses of technology as well as the number of girls who need to access higher education.

Second, the race equality necessary to be resolved by considering all colours equally and approaching technology well Teachers and students in the academic hierarchy must be well-evolved in their use of technology.

Third, socio-economic status needs to be considered among the students and faculty.

Finally, the study suggests that if all of the parameters could be balanced and solved, it would automatically lead to a paradigm shift in education.

4. CONCLUSION

In conclusion, the study aims to scan factors associated with educational technology for equality. The use of technology in education should focus on treating all in the same manner, resulting in a change in the teaching and learning process and better learning outcomes for qualitative change in education. There is a need to make sure that everyone has the possibility of accessing technology. The paper suggests that education technology needs to consider equality in terms of gender, race, disability, language, social, and economic status, as well as academic hierarchy. These parameters need to be checked in order to have equality in the use of technology.

The success of that will lead to a paradigm shift in education.

5. RECOMMENDATION

The study recommends on the following matters;

- To reduce or minimize the after-class duties for females and need to give girls time to access technologies at school rather than rushing home for domestic activities.
- The government needs to support educational institutions and schools by giving them suitable support to buy the teaching materials and technological equipment that will be used by all students, regardless of colour. The government needs to be serious in this matter and not only promise the institution but also make an investigation into whether the equipment is bought or not.
- The support to the poor and underdeveloped countries regards the availabilities of assistive technologies and the need to have Centre's at each university about assistive technologies.
- The need to have more than one language in education is like having a language for people who are deaf. So that they could be comfortable with learning in the education sector. This should be at each Centre where students who are deaf need to access technology.
- The need for personal assistance from someone who can guide the disabled students on how to access technologies in education
- Also, the app for learning languages online must favor disabled people, like those who are deaf.
- Training is needed for teachers so that they can access technologies in education.
- There is a need to fix language obstacles with the aim of accessing technologies in the education sector for adults, students, and research scholars. In education, for a paper to be published, needs a neat and clean language.
- The language needs to be solved as educational technology will be for all in reality rather than theory.
- The papers recommend that the government make policies about educational technology for all.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Huang R, Spector MJ, Yang J. Educational technology: A Primer for the 21st Century. Springer; 2019.
2. Bond M, Bedenlier S. Facilitating student engagement through educational technology: towards a conceptual framework. J Interact Media Educ. 2019; 2019(1):1-14.
3. Angeli C, Howard SK, Ma J, Yang J, Kirschner PA. Data mining in educational technology classroom research: can it make a contribution? Comput Educ. 2017;113:226-42.
4. Espinosa M-PP, Tudela P-AG, Fernández s-MS. Gender equality and ICT in the context of formal education: A systematic review. Media Educ Res J. 2020:9-19.
5. Scharber C, Pazurek A, Ouyang F. Illuminating the (in)visibility of female scholars: a gendered analysis of publishing rates within educational technology journals from 2004 to 2015. Gend Educ. 2019;31(1):33-61.
6. UN. Gender equality and empowerment of Women through ICT. Women 2000 and beyond; 2005.
7. Falah SA. Gender differences toward using educational technology in chemistry classes of Afghanistan Universities. 151-156. Int J Multidiscip Trends. 2021;3:1.
8. Wang X, Chen T, Zhang Y, Yang HH. Implications of the Delphi method in the evaluation of sustainability open education resource repositories. Educ Inf Technol. 2021;26(4):3825-44.
9. Stevens PA, Dworkin AG. In: Stevens P, Dworkin A, editors The Palgrave Handbook of Race and Ethnic Inequalities in Education. Introduction to the handbook. 2nd Ed: Comparative Sociological Perspectives on Racial and Ethnic Inequalities in Education. Cham: Palgrave Macmillan; 2019.
10. Gonçalves LA, da Silva NN, Brooke N. An overview of research on race and ethnic

inequalities in education. In: Stevens P, Dworkin A, editors. The Palgrave handbook of race and ethnic inequalities in education. Cham: Palgrave Macmillan; 2019.

11. Hersh M, Mouroutsou S. Learning technology and disability—overcoming barriers to inclusion: evidence from a multicountry study. Br J Educ Technol. 2019;50(6):3329-44.

12. Shaheen NL, Lohnes Watulak SW. Bringing disability into the discussion: examining technology accessibility as an equity concern in the field of instructional technology. J Res Technol Educ. 2019;51(2):187-201.

13. Valle JW, Connor DJ. Rethinking disability: A disability studies approach to inclusive practices. 2nd ed. Routledge; 2019.

14. Senjam SS, Foster A, Bascaran C, Vashist P, Gupta V. Assistive technology for students with visual disability in schools for the blind in Delhi. Disabil Rehabil Assist Technol. 2020;15(6):663-9.

15. DiPilla R. The Language of Equality: making gender equality and education a reality by 2030; 2019. Available from: https://theoptimist.news/the-language-of-equality-making-gender-equality-and-education-a-reality-by-2030/.

16. American University. What's the difference between educational equity and equality?; 2020, April 16. [retrieved Sep 23, 2021 from]. Available:https://soeonline.american.edu/blog/educational-equity-and-equality

17. Nami F. Educational smartphone apps for language learning in higher education: students' choices and perceptions. Aust J Educ Technol. 2020;36(4): 82-95.

18. Lister K, Coughlan T, Owen N. Disability' or 'Additional study needs'? Identifying students' language preferences in disability-related communications. Eur J Social Needs Educ. 2019:620-35.

19. McKenzie J, Pizzica J, Gosper M, Malfroy J, Rowe KA. Socio-economic status and students' experiences of technologies: is there a digital divide? Critical perspectives on educational technology. In: Proceedings of the ascilite. 2014;688-92.

20. Tadesse S, Muluye W. The impact of COVID-19 pandemic on education system in developing countries: A review. Open J Soc Sci. 2020;08(10):159-70.

21. Costa C, Alvelos H. Investigating the use and acceptance of technologies by professors in a higher education institution. Int J Online Pedagog Course Des. 2019; 9(2):20.

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