Technology mediated teaching/learning as a pathway to inclusive higher education for Sustainable development: What are the pending gender issues

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Abstract

Open, flexible and online education is being adopted by institutions to enhance their efforts to achieve increased levels of access to inclusive learning opportunities. However, while the significant growth in online learning opportunities is acclaimed for breaking the barriers for disadvantaged groups, this paper aims to assess the residual gender issues in this breakthrough. The paper recognizes the fact that in the context of developing countries, technology mediated teaching and learning is gaining currency, especially in higher education. Using that context as its unit of analysis, the paper argues that there are still gender inequality issues that stand in the way of potential achievements by technology mediated learning to close the gendered gap in access to higher education. Technology mediated teaching and learning has unique benefits for teachers and students. What remains scanty is disaggregation of the benefits by gender, which is still a strong paradigm of exclusion in education particularly. While there is evidence to suggest that students benefit differently from technology-mediated learning, dependent on their gender, the paper aims to establish the extent to which this is the case in higher education. Focusing on the teacher, the central question that this paper seeks to answer is, what is the contribution of teachers to the gender gap in the benefits derived by students from technology mediated teaching and learning? The answers that this paper aims to generate, are expected to inform strategies that could be used to remedy the situation so that open, flexible and online teaching and learning can alleviate the daunting challenges of the persistent gender inequality in access to inclusive higher education

Key words: *Open, flexible, online education, higher education, technology mediated, gender inequality, inclusion/exclusion*

Introduction

Open and distance learning (ODL), which is a multi-media driven mode of education delivery, is being adopted by governments and institutions to overcome barriers to enrolment, increase access to learning opportunities and enhance efforts to achieve increased levels of inclusive education and training. ODL is becoming increasingly indispensable as a component of "mainstream education" in many developed and developing countries, (Daniel, 2002; UNESCO, 2002; Robinson & Latchem, 2003; Perraton, Robinson & Creed, 2007 cited in Robinson, 2008). Pityana (2009) notes that in the African context, ODL has become a policy option for a growing number of countries, with the potential to provide higher education en masse, while those studying remain employed and continue servicing the market and contributing to development.

This paper recognizes that in the context of developing countries, ODL and technology mediated teaching and learning are gaining currency, especially in higher education. For many who have completed high school education, the next place to go is a tertiary institution. However not all are able to go into tertiary institutions for various reasons, including limited access, financial and/or personal life circumstances. This is where ODL comes in.

Technology mediated teaching and learning in higher education

Information and communication technologies (ICTs) are a key feature of ODL, central to technology mediated teaching and learning. In discussing the role of ICTs in education, most authors recognise that in many industrialised countries, technologies are now regarded as a ready means for governments to address development issues, as promoted through education (Selwyn, 2002). These positive views about the need for institutions to adopt ICTs have also been propelled by some of the key players in global development, in particular in the educational landscape. The World Bank has alerted all about the transformative power of ICTs that permeates the very core of societies and institutions. They have the power to boost economic, social and cultural development; facilitate efforts to combat poverty; and promote equality and gender empowerment (World Bank, 2006). ICTs are now part of a global culture, which is increasingly working its way into societies and institutional structures in all parts of the globe.

In the context of higher education in particular, this is a culture that has potential to overcome barriers to accessing education and learning. Application of these technologies is acclaimed to have high benefits in the teaching/learning environment, hence a recognized growth in their use.

Residual gender issues of technology mediated teaching and learning

The growth in technology mediated teaching and learning has been stimulated in part by advancement of multimedia and Internet based technologies and the realisation that traditional ways of organizing and delivering education need to be reinforced by innovative strategies, as well as the pursuit of the right of all people to education, as outlined in the EFA framework (UNESCO, 2002). The significant growth in online learning is acclaimed for breaking barriers to educational opportunities for the socio economically disadvantaged groups in society, who experience different forms of disadvantages, differently. This paper assesses the residual gender issues in this breakthrough. There is evidence to suggest that since the beginning of the debate on the gender based digital divide, some inroads have been made to redress the situation. ICTs are known to have positively influenced women and girls on how to access relevant valuable information. This has made ICT an important resource for the empowerment of women and girls, the question of which women and in what contexts notwithstanding (Cummings and O'Neil, 2015:1).

That ICTs have the power to facilitate acquisition of new skills across gender lines, which often result in social and economic benefits, is undisputable. They open up new horizons for progress and the exchange of creativity and intercultural dialogue. Cummings and 0'Neil (2015) posit that through learning new skills and using ICTs, women and girls have been able to build their self-confidence; increase their economic power and independence, and make better-informed decisions. ICTs can also enable women to communicate with peers online, exchange information, build solidarity and lobby decision-makers. One of the key issues of concern however, is that these benefits are evidently not shared equally among the different societies and social groups. The growing digital divide is actually leading to greater inequalities in development. This gives rise to paradoxical situations where those who need them most, the disadvantaged groups: rural communities, illiterate populations, women, and even entire countries, do not have access to the tools which would enable them to become fully-fledged members of the knowledge society (UNESCO, 2002:8).

Within countries and across regions, there are recorded enormous disparities in ICT development, access, adoption and patterns of use. Hence, the common reference to uneven access to ICTs, and digital divide (Hilbert, 2011; Mathabe, N. 2006; Insung J & Gunawardena C. N., 2014). The higher education sector is one of the key sectors in which such disparities have been identified. It is submitted in this paper that these disparities need to be understood and unpacked, with particular focus on those that are gender based, as well as their implications in the ODL landscape. Some researchers and development practitioners are of the view that, the question of whether ICTs are tools of convergence or divergence should be high on the agenda of the current discourse on these technologies.

From these concerns, some developed countries have called for a 'socially inclusive' policy agenda. Aiming to end social exclusion and build inclusive societies now forms a central part of the academic and political discourse in these countries. Selwyn (2009), reports that by 2000 there were commitments being made for the UK to deal with the divide. The Prime Minister was quoted as saying "… this technology is revolutionising the way we work, the way we do business, the way we live our lives. Our job is to make sure it is not the preserve of an elite but an internet for the people". (Blair, 2000 cited by Selwyn, 2009:5). It is further argued that, if the digital divide is not tackled, it will entrench existing exclusion for generations, since familiarity with ICTs is the indispensable grammar of modern life. Those not empowered by it are disenfranchised, observed Wills, 1999: 10 cited by Selwyn, 2009:5.

Challenges with regard to use of technology for teaching and learning

One of the key challenges for higher education institutions has been how to effect the transition from traditional face-to-face to technology mediated learning. This is because technology mediated teaching/learning, though usually characterized as a powerful approach to knowledge sharing, is also a very complex and dynamic process (Kenny, C., 2002). Using ICTs for teaching and learning has gained significant currency over the last few years in higher education institutions of the developing world. However, this approach is still relatively new and undeveloped.

In fact, in most instances ODL is still just a complement of the traditional face-to-face instruction as institutions continue to experiment with it and assess its potential for effective instruction. Efforts to adopt this approach to delivery of education in the context of higher education institutions in Africa for example, still face many challenges. These challenges include unavailability of relevant technology and

the accompanying infrastructural resources; lack of national and institutional policy frameworks on ICT application in the higher education context. In developing such policies, a number of factors are taken into consideration. Among others, inequality in the use of ICTs for teaching and learning in higher education has been identified and acknowledged by recent research (Meyers, 2006; Pityana, 2009; World Bank, 2006). This inequality is experienced by the diverse groups that are found in higher education, gender being one of the factors that form a basis for different and unequal access to technology. The thesis of this paper is that, gender inequality in access to technology stands in the way of technology dependent educational delivery modes such as ODL, to achieve as much as it could if there was equality in access to technologies regardless of gender.

Gender inequality issues standing in the way of potential achievement by technology mediation to close the gendered gap in access to higher education

This paper argues that there are gender inequality issues that stand in the way of potential achievement by technology mediated learning to close the gendered gap in access to higher education. An extensive study by Hilbert (2011) on the digital divide and technological empowerment of women in developing countries revealed that the main reason why fewer women in developing countries access and use ICTs is their unfavourable conditions with regard to employment, income and education.

Among the many gender inequality issues which are relevant in discussions of access to education, this paper picks the following issues to demonstrate their implications for the limited success by ODL to achieve maximum results for women.

(i) Education

(a) Low Literacy/High illiteracy rates among women

Distinguishing between basic literacy and functional literacy, research shows that regarding functional literacy of technologies used in ODL to mediate teaching and learning such as computers, women are generally lagging behind their male counterparts in most of the developing world. In a study conducted by Green and Trevor-Deutsch (2002), 80% of the female students of the University of the South Pacific (USP) indicated a lack of computer literacy and appropriate training as a barrier to their use of ICTs for ODL. A Bangladesh survey of women professionals also found that 60% had no computers exposure at all. The computer knowledge of the remaining 40% was limited to word processing (Green and Trevor-Deutsch, 2002).

Unbalanced computer and technology related literacy skills and proficiency is evident in some of the technology mediated programmes offered by the Botswana College of Distance and Open Learning (BOCODOL), through the School of Education. A total of 84 students (51 female and 33 male), were enrolled on the technology mediated MEd Educational Leadership programme. At the beginning, BOCODOL gives all students orientation on the programme as a whole and its delivery mode, including how to use the Moodle platform for content, support, communication with tutors and other students, submission of assignments etc. During the delivery process, it became evident that the male students had more confidence to navigate the technology and the Moodle platform, compared to their female counterparts. This was evident in the submission of assignments, where about 75% - 80% of timely submissions would be from the male students. A similar pattern would arise in the case of discussion forums, where most of the discussion threads would be led by male students (around 60% male and 40% female led discussions). The participation rate for such forums would also be skewed towards male than female participation. The pass rate for discussion forums indicated an estimated 70% for males and 30% for females. However, in activities like the dissertation, which allows each student to do research alone and interact with all types of resources, submission of final work was the same for males and females (50/50). This trend was evident in the other four technology mediated programmes of the School of Education at BOCODOL (Certificate for Distance Education Practitioners, Post Graduate Certificate in Quality Assurance in Education and BEd Primary). This seems to demonstrate that more males are more confident and comfortable with the use of technology than females. Therefore, more support might be necessary for female students enrolled in technology mediated programmes, especially in developing countries.

The diversity of digital technologies and the contexts in which they are used make it challenging to identify the particular role of gender in shaping any learner's experience (Zhao 2003). For example, young people are popularly characterized as 'digital natives,' assumed to be fluent with digital technologies and able to learn differently through modern technology. However, the complexity and diverse effects of young people's technology experiences differ (Bennett, Maton and Kervin 2008).

An illustration of the persistent gender inequalities in access to education even in the phase of ODL is presented below from Tanzania

Table 1: *Enrolment data for ODL at the Institute of Adult Education 1972-2006*

Programme	**Male**	**Female**	**Total**
Mass Education	53,676	6,468	60,144
Secondary Education	124,046	21,868	145,914
Professional Education	4,837	676	5,513
Total	**182,559**	**29,012**	**211,571**

Source: Institute of Adult Education records

Table 2: *Graduands by programme and gender* ***1972-2006***

Programme	**Male**	**Female**	**Total**
Mass Education	17,126	1,667	18,793
Secondary Education	21,665	1,422	23,087
Professional Education	1,272	30	1,302
Total	**40,063**	**3,119**	**43,182**

Source: Institute of Adult Education records

Tables 1 and 2 indicate two glaring issues of gender imbalance in enrolments and poor completion rates, known to be higher for female students.

Since technology drives all social, political and economic activity in the global information society of the 21st century, low self esteem and low levels of proficiency and confidence around technology would restrain the affected individuals (mostly women) from realising their full potential.

(b) English Language Proficiency

Most of the curricula content which is technology mediated is in English, as a medium of instruction. This makes relevant the issue of language competencies which in most instances are a factor of gender**.** Various writers and researchers have shown that one of the most critical issues for women with regard to ICTs is proficiency in the English Language, resulting in limited understanding of the use of ICTs and limited know-how. Therefore training and skills development, content and language are a big challenge for most women in technology mediated teaching and learning environments, compared to their male counterparts.

(c) Gender differences in learning style preferences

Wehrwein, E.A., Lujan, H.L. and DiCarlo, S.E. (2006) submit that students have different individual and gender biased learning preferences, including visual (V) presentations e.g. graphs, charts, diagrams etc, auditory (A) presentations, reading and writing (R) and from kinesthetic (K) learning through touch, hearing, smell, taste, and

sight. Their study revealed that the majority of male students preferred multi-modal instruction, especially the use of all four modes, while the majority of female students preferred single mode instruction, with a preference for the K mode. The study therefore indicated significant learning style preferences for male and female students, which calls for development of different, appropriate and effective teaching/learning approaches.

(ii) Patriarchal male centric employment and industry practices

Patriarchal male centric societies and school systems (in terms of gender roles and gender relations of power), result in limited decision-making opportunities for women and their access to and control over resources. School systems and higher education institutions, though on paper discourage the marginalisation of women, in practice, continue to mirror this as evidenced through the marginal status of women and girls in science and technology with regard to access to and control over decisions related to technology within the framework of their low social status which relegates them to minors (Hilbert, M. 2011; Suriya, M. http://w3.unisa.edu.au/hawkeinstitute/documents/suriya.doc).

(iii) Income - Rurality and poverty

Rurality is a gender issue with women forming larger percentages of rural dwellers in the developing world. Many of the world's poorest people are women living in rural areas who, as the primary family caretakers and producers of food, shoulder the burden of tilling land, grinding grain, carrying water and cooking. Gender equality makes economic sense because when women have equal access to education they are better able to fully participate in business and economic decision-making, becoming a key driving force against poverty. Women with better education and health, who have greater access to land, jobs and financial resources, have greater opportunities at realising equality with their male counterparts. http://www.undp.org/content/undp/en/home/ourwork/povertyreduction/focus_areas/focus_gender_and_poverty.html In reality, the old adage that if you educate a woman, you have educated a society is defeated by extreme poverty for rural women in developing countries, often the most marginalised and least likely to receive the educational support they need to learn how to change their lives.

Conclusion

The rapid technological development is steadily affecting ways of thinking about instruction at all levels of educational systems and ICTs are changing the face of delivery (Cantor, 2002). Bhalalusesa (2001) argues that ODL is a woman-friendly way of acquiring education. It meets women's learning needs, providing flexibility to manage time and attend to household commitments. ODL affords women cooperative and supportive learning, where they share personal experiences. They benefit from study groups, social interaction and a supportive home environment. Women retain knowledge better if they can apply it to their lived experiences. It is concluded that for these characteristics, ODL could be a key gender responsive contributor to success in educational delivery. Studies show higher female participation ratios in ODL programmes than traditional universities, indicating that online learning allows more women to access education. When women receive education and become income generators, their status increases, their children receive more education and they are empowered.

Research shows that access to ICT continues to be patterned along socioeconomic factors (Selwyn, 2009). This paper submits that gender is one of the key influencing factors for the digital divide, in line with theories of 'information poverty'. It is argued that **p**eople who experience 'information poverty' have insufficient access to 'information and knowledge' (Kenny, 2000, in Dlodlo, 2009: 168 in Cummings and O'Neil, 2015:8). In the context of the connected information society, the 'digital divide' is a related concept widely used to describe 'inequality in the power to communicate and to process information digitally' (Hilbert, 2011: 4).

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