



Globalization and technology-mediated distance education: developing countries' perspective

Conference or Workshop Item

Accepted Version

Liyanagunawardena, T. R., Adams, A. A., Rassool, N. and Williams, S. (2013) Globalization and technology-mediated distance education: developing countries' perspective. In: The Unisa Cambridge International Conference on Open, Distance and eLearning, 29 September 2013- 02 October 2013, Cape Town, South Africa. Available at <http://centaur.reading.ac.uk/34440/>

It is advisable to refer to the publisher's version if you intend to cite from the work.

Published version at: <http://www.unisa.ac.za/ODEL2013/>

All outputs in CentAUR are protected by Intellectual Property Rights law, including copyright law. Copyright and IPR is retained by the creators or other copyright holders. Terms and conditions for use of this material are defined in the [End User Agreement](#).

www.reading.ac.uk/centaur

CentAUR

Central Archive at the University of Reading

Reading's research outputs online

Globalization and Technology-Mediated Distance Education: Developing Countries' Perspective

Tharindu R. Liyanagunawardena¹, Andrew A. Adams², Naz Rassool³, Shirley A. Williams¹

¹School of Systems Engineering, University of Reading

²Centre for Business Information Ethics, Meiji University

³Institute of Education, University of Reading

t.r.liyanagunawardena@reading.ac.uk, aaa@meiji.ac.jp,
n.rassool@reading.ac.uk, shirley.williams@reading.ac.uk

Abstract

The contemporary global economy places great value on highly educated workers but devalues workers in repetitive or low skill jobs. In order to thrive in this new economy, countries must ensure sufficient higher education opportunities for their population. However, a lack of resources is a major barrier faced by many developing countries in expanding their higher education systems. Technology-mediated distance education has the potential to be an invaluable tool in offering educational opportunities to people, if the other necessary conditions for participation are met. Although technology-mediated education was first considered to be a medium to bridge the learning divide across space, today it is feared that it could well become an inequality intensifier. Drawing on examples from developing countries, this paper considers factors regarding implementing technology-mediated distance education, including failure to address contextual issues and possible consequences. Challenges and policy implications are also discussed.

Background

Information Communication Technologies (ICTs) are an intensive and facilitating force for globalization, which has transformed the world's economy into a global economy (Castells, 2000a). This contemporary global economy is identified by some as the knowledge economy, to demonstrate the vital use of knowledge in the production and innovation process (David & Foray, 2003). In this economy, production and services are primarily based on knowledge-intensive activities with heavier dependence on intellectual capabilities than on physical inputs or natural resources (Powell & Snellman, 2004).

Before the dawn of this new economy, the production process depended on routine labour, which had very little control over the work process and required little craft skills or knowledge (Rassool, 1999). These generic routine workers only required basic literacy, numeracy, and discipline for this work. Routine work can be automated; the decreasing cost of automation allows manufacturers to eliminate routine work through automation, making workers in routine work more and more

disadvantaged in the contemporary world of work (Klein, 2002). Conversely, knowledge workers (Drucker, 1970) or self-programmable labour (Castells, 2000b) need higher order knowledge and critical thinking to autonomously work towards set goals by searching and locating relevant information and assimilating them into knowledge, which is then incorporated into the work to achieve the goals. The critical difference between knowledge workers and generic workers "is education, and the capacity of accessing higher levels of education" (Castells, 2000b, p372). With these global transformations, the literacy rate, a traditional indicator of education and standard of living in a country, becomes insufficient. Instead, the percentage of students attending tertiary education has become a common measure of development (Dordick & Wang, 1993). At the same time as an economy moves towards knowledge-intensive production, the competitiveness of corporations depends on the knowledge and skills of their workforce (Brown, Green et al., 2001). As a result, unlike the earlier situation, great emphasis is placed on lifelong learning to enhance the skills of working adults.

Technology-Mediated Distance Education

With these transformations in the world of work, it is no surprise that higher education has experienced an increasing demand. Creating more opportunities for higher education is a great challenge faced by developing countries in particular, and increasingly so as they approach universal participation in secondary education (UNESCO Institute for Statistics, 2011). With already restricted budgets, it is difficult if not impossible for many developing countries to expand access to higher education in traditional modes (Haddad & Jurich, 2002). In this context, distance education, where students study in their own time, at a place of their choice, with little or no face-to-face contact, is seen as a remedy because, it is argued, properly-managed distance education can provide quality education to the masses at a lower unit cost than conventional systems. On the other hand, technology-mediated distance education is heavily relied on for continuous professional development and lifelong learning because it can provide the necessary flexibility for adult learners who might already be in employment.

The Internet technologies that intensified globalization have been expected to create a revolution in higher education by providing access across the globe to many who were excluded from the traditional system. For example Massive Open Online Courses (MOOCs) can be enrolled into by anyone anywhere in the world for free, provided that they have 'access'. Although it has yet to produce the expected revolution in the developing world, the influence of technology-mediated distance education is widely felt worldwide, especially in the higher education sector.

Implementation in the Developing World

Various multimillion dollar projects have implemented technology-mediated distance education in developing countries. The African Virtual University (AVU), a

project funded by the World Bank, and the Distance Education Modernization Project (DEMP) in Sri Lanka, funded through a long term loan by the Asian Development Bank, are two examples of such endeavours.

The selection of appropriate technology when implementing such projects needs strategic and tactical planning as well as consideration of basic practicalities. However, "technology decisions have tended to be made primarily for commercial, administrative or political reasons" (Bates, 2005, p46). For example, technologies adopted in the AVU project have been criticized for their high cost and limited accessibility (Amutabi & Oketch, 2003); in Sri Lanka, with only 0.7% of citizens having Internet access in 2001, the government's decision to invest in online distance education programmes also gave cause for concern about the levels of accessibility (Liyanagunawardena, 2012). In fact, the project completion report for the DEMP found it to be 'highly relevant' to Sri Lanka's strategies and vision but admitted that the project had been 'less effective', 'less efficient' and 'less likely sustainable' [than expected] (Asian Development Bank, 2011).

ACTIONS is a framework proposed by Bates (2005) for technology selection and application in open and distance learning. This framework also represents the order of priority of each of the factors considered: Access – the accessibility of a technology for the target learner groups; Costs – the cost structure of technology; Teaching and learning – types of learning required and technologies that can support them; Interactivity and user-friendliness – the types of interactions supported by a technology and the ease of use; Organizational issues; Novelty; and Speed – time required to prepare new courses and to make modifications to existing course materials. Access is identified as the most important criterion for technology selection, because in open and distance learning widening and increasing participation is often a priority. However, it seems that implementation of technology-mediated distance education in some parts of the developing world have overlooked this aspect.

Levels of Access

Theoretically through the Internet, it is possible for learners to access learning materials from 'anywhere' and at 'anytime'. However, when one can only access the Internet from communal facilities (such as a library, telecentre or even an Internet cafe) as is the case for many in the developing world who do not have computers and/or an Internet connections at home, it inevitably introduces another set of barriers to be overcome. Although communal facilities provide some level of access, it may be difficult to solely rely on them for eLearning (Liyanagunawardena, Adams, Rassool, & Williams, 2011). For example, communal access centres may have to limit students' access due to a mis-match between hardware available and student demand at certain times (at other times those centres may be all but unused); various administrative procedures as well as opening times may cause inconvenience to users (Liyanagunawardena, Adams, Rassool, & Williams, 2013a; 2013b). Furthermore, travelling to a communal access

centre may also be difficult for some who have to rely on infrequent public transport services, especially in rural areas. On the other hand, even the students who have their own internet connectivity may find it difficult to use online resources due to slow and/or unreliable connectivity if the social and technological infrastructure is not supportive (see Liyanagunawardena (2012) for a detailed discussion).

'Access' as discussed above primarily relates to the physical access to technology. In order to guarantee the full provision of technology-mediated education there are other levels of access required: motivational access, material access (physical access), skills access and usage access (van Dijk, 2005). Even when physical access is available, unless one has appropriate digital skills the full use of the available opportunities for learning is impossible. Liyanagunawardena's study (2012) reports of a young female school teacher who does not know how to use the facilities (computers and internet access) available to her. Therefore, not only the provision of physical access but also increasing digital literacy is vital for exploitation of these new learning opportunities.

Not being a competent international language user can become a major barrier when participating in technology-mediated education (Williams, Spiret, Dimitriadi, & McCrindle, 2013). For example, the majority of MOOCs (and of many other Open Educational Resources) are offered in English, with some provision in other major European languages, but there is a deficit of multilingual provision, other than the potential for support groups to be formed by students who share a common first language. Many participants rely on online translation systems (such as Google Translate), but there is significant scepticism about the quality of these translations (Williams, et al., 2013).

Divides

Although globalization is hailed by some as creating a 'flat world' (Friedman, 2006), it is now feared that it has, or may, become an inequality intensifier (Castells, 2000a). Similarly, Internet technologies were expected to create a revolution in higher education (Pittinsky, 2003; Manicas, 2007) by providing access to many who were excluded from the traditional system of higher education, especially in the developing countries. Today it is feared that technology-mediated education (especially online education) will widen the inequalities (Zhang, 2005) as many of these programmes seemed to be serving the already privileged. For example, Liyanagunawardena, et al. (2011) report that 63% of students enrolled in a fully online degree programme in Sri Lanka were from households earning more than the median income. It is also feared that online learning could introduce a tiered educational system where those who have 'access' could take up courses from world leading universities (either through paid enrolment or openly available courses such as MOOCs), while others are confined to locally available educational opportunities (Zhang, 2005).

Divides can be caused by multiple, overlapping factors including: geography, education, culture and law. They generally affect the level of access to resources. For example, Liyanagunawardena (2012) observed in her study that many students from Colombo (Capital of Sri Lanka) were economically better-off than their counterparts and had more resources such as computers, Internet connectivity, and library access and had better English ability. This economic disparity was in accordance with the income distribution of the country; in estates (plantations which are 20 acres or more, and have 10 or more labourers) the mean household income was Rs.24,162 while in Colombo (the capital of Sri Lanka), the mean was Rs.51,070 (Department of Census and Statistics Sri Lanka, 2011) – even more than double the mean income of an estate household. However, in some instances, especially in the developing world, these divides could be cultural; for example, females in countries such as Afghanistan where the Taliban, an Islamic fundamentalist group, bans females receiving education after the age of eight (Physicians for Human Rights, 1998); the Dalit community (people belonging to Scheduled Caste) in Nepal where the majority of people do not have access to education or health services (Bhatta, 2012).

Facing the Challenge

Success with technology-mediated education depends on many factors including access to technology, support available to students, user skills with technology for learning and user perception of the approach. A successful implementation may or may not work when transplanted to a different context. Thus it is important to consider context specific factors in making decisions for technology-mediated education. There are bold initiatives to promote technology-mediated distance education in developing countries such as the effort to start an entirely MOOC-based university in Rwanda (Leber, 2013). If successful, it would be an important contributor in establishing MOOCs in developing countries. However, the providers will need to identify a working model for the given context to support student engagement as reports to date show that a large majority of MOOC participants fail to complete them (Liyanagunawardena, Williams, & Adams, 2013). This could be a MOOC+ model where the students are encouraged to take the MOOC and are also supported through complementary in-person classes held locally where they can also seek help and support from peers or volunteer tutors using a local language(s).

Policy initiatives to provide universal (physical) access to the Internet, introduce international languages (in addition to local languages) and digital skills in schools may become long-term investments in supporting technology-mediated education. Localisation of content, exploration of complementary models such as MOOC+ that are more acceptable and practical in a given context may also be vital in widening participation. A proper analysis of the feasibility of a project before undertaking costly implementation is another important but often overlooked factor in this area, especially in developing countries. For example, Liyanagunawardena (2012) claims that if research had been conducted into the amount of money students

could afford for accessing online courses through communal access facilities offered under the DEMP, it might have resulted in a more realistic estimation of cash flow calculations and a sustainable project. Such technology adoption decisions for distance education, progressed without proper cost-benefit analysis, result in huge investments, which produce little or no benefit (considering the amount of debt incurred), to the general public, possibly planting seeds of scepticism in people's minds concerning future projects. Thus policy and practice decisions need to be made consciously considering the specific context in which the project is to be implemented.

Conclusion

Technology-mediated distance education has the potential to be an invaluable tool in offering educational opportunities to people in developing countries, especially for marginalized groups in some places, but only where the other necessary conditions for participation are met. However, there is evidence to suggest that it is the already privileged who benefits most from many such initiatives (Liyanagunawardena, et al., 2011). Selecting the appropriate technology or model for delivery requires careful analysis of many parameters, such as those defined by the ACTIONS framework. Overlooking context in technology adoption decisions have caused some projects to fail miserably after costly implementation. By consciously selecting appropriate technologies and models to fit specific contexts, technology-mediated distance education could be used to serve a wider learner community. However, in order for technology-mediated education to be a cost-effective method of expanding higher education, universal access, digital literacy and/or exposure to international languages may be necessary. Thus policy initiatives and the necessary commitment to fulfil them become vital in encouraging technology-mediated distance education, especially in the developing world.

It should also be noted that attempting to achieve multiple goals using a single approach will often lead to at most the success of only a single goal and potentially to the failure to achieve any of the goals. In particular, increasing total access to higher education may be easier to achieve by investment in technology-mediated distance learning approaches targeted at those already in possession of suitable language skills, digital literacy, computer ownership and (at least potentially affordable) Internet access as demonstrated by Liyanagunawardena (2012). Three separate projects aimed at expanding urban middle-class participation in higher education, at broadening participation amongst the rural population and at broadening participation amongst the urban poor, would have been more cost-effective overall at achieving each of these separate goals. A properly coordinated approach can allow cross-fertilisation and re-use of resources where feasible, but each separate project has its own context, constraints and opportunities. In particular broadening access may require more resources and more flexibility but may help address social inequalities, while the more cost-effective (per student graduating) option of expanding access may more quickly boost the national economy to help pay for the broadening participation. Cross-subsidising the

broadening participation efforts by charging higher fees in the expanding participation effort may also be feasible and socially acceptable.

References

- Amutabi, MN & Oketch, MO 2003, 'Experimenting in Distance Education: The African Virtual University (AVU) and the Paradox of the World Bank in Kenya', *International Journal of Educational Development*, vol. 23, no.1, pp. 57-73.
- Asian Development Bank 2011, *Completion Report - Sri Lanka: Distance Education Modernization Project*, Asian Development Bank.
- Bates, AW 2005, *Technology, E-Learning and Distance Education*, 2nd edn, Routledge, Oxon.
- Bhatta, N 2012, 'Citizenship and Cast based Discrimination a Study of Dalit Communities: Case studies from Western Nepal', Bachelor of Social Services Thesis, Diaconia University of Applied Sciences, Finland.
- Brown, P, Green, A & Lauder, H (eds.) 2001, *High Skills: Globalization, Competitiveness and Skill Formation*, Oxford University Press, Oxford.
- Castells, M 2000a, *The Rise of Network Society*, 2nd edn, Blackwell, Oxford.
- Castells, M 2000b, *End of Millennium*. 2nd edn, Blackwell, Oxford.
- David, PA & Foray, D 2003, 'Economic Fundamentals of the Knowledge Society' *Policy Futures in Education*, vol. 1, no. 1, pp. 20-49.
- Department of Census and Statistics Sri Lanka 2011b, *Household Income and Expenditure Survey - 2009/10: Preliminary Report*, viewed 07 April 2013, <<http://www.statistics.gov.lk/HIES/PreReportHIES2009Eng.pdf>>
- Dordick, HS & Wang, G 1993, *The Information Society: A Retrospective View*, Sage, London.
- Drucker, PF 1970, *The Effective Executive*, Pan Books, London.
- Friedman, TL 2006, *The World is Flat: The Globalized World in the Twenty-First Century*, Penguin Books, London.
- Haddad, WD & Jurich, S 2002, *ICT for Education: Potential and Potency. Technologies for Education*, UNESCO.
- Klein, N 2002, *No Logo*, Picador, New York.
- Leber, J 2013, 'In the Developing World MOOCs Start to Get Real', *MIT Technology Review*, viewed 22 March 2013,

<<http://www.technologyreview.com/news/512256/in-the-developing-world-moocs-start-to-get-real/>>

Liyanagunawardena, TR, Adams, AA, Rassool, N & Williams, S 2011, 'Extending higher educational opportunities through e-Learning: a case study from Sri Lanka', *Proceedings of the 1st International Australasian Conference on Enabling Access to Higher Education*, Adelaide, Australia, pp. 291-301.

Liyanagunawardena, TR 2012, 'Information Communication Technologies and Distance Education in Sri Lanka: A case study of two universities', PhD Thesis, University of Reading, UK.

Liyanagunawardena, TR, Williams, SA & Adams, AA 2013, 'The Impact and Reach of MOOCs: Developing countries perspective', *eLearning Papers*, vol. 33.

Liyanagunawardena, TR, Adams, AA, Rassool, N & Williams, S 2013a, 'Telecentres and e-learning', *British Journal of Educational Technology* (in Press).

Liyanagunawardena, TR, Adams, AA, Rassool, N & Williams, S 2013b. 'Using non-Personal Computers for eLearning: Sri Lankan Experience', *Education and Training Studies*, vol. 1, no. 2, pp. 152-158.

Loxley, W, Ho, S, Vandenabeele, C, Gutierrez, L, et al. 2003, *Report and Recommendation of the President to the Board of Directors on Proposed Loan to the Democratic Socialist Republic of Sri Lanka for the Distance Education Modernization Project*, Asian Development Bank, viewed 16 April 2012, <http://www.adb.org/documents/rrps/sri/rrp_sri_33251.pdf>

Manicas, P 2007, 'Globalization and Higher Education', in Ritzer G (ed.), *The Blackwell Companion to Globalization*, Blackwell Publishing, Oxford, pp. 461-477.

Physicians for Human Rights 1998, *The Taliban's War on Women: A Health and Human Rights Crisis in Afghanistan*, Boston, Washington DC.

Pittinsky, MS (ed.) 2003, *The Wired Tower: Perspectives on the Impact of the Internet on Higher Education*, Prentice Hall, Upper Saddle River.

Powell, WW & Snellman, K 2004, 'The Knowledge Economy', *Annual Review of Sociology*, vol. 30, pp. 199-220.

Rassool, N 1999, *Literacy for Sustainable Development in the Age of Information*, Multilingual Matters Ltd., Clevedon.

UNESCO Institute for Statistics 2011, *Global Education Digest 2011: Comparing Education Statistics Across the World*, Montreal, viewed 25 April 2013, <http://www.uis.unesco.org/Library/Documents/global_education_digest_2011_en.pdf>

van Dijk, J 2005, *The Deepening Divide: Inequalities in the Information Society*, Sage, Thousand Oaks.

Author's final copy

Williams, S, Spiret, C, Dimitriadi, Y & McCrindle, R 2013, 'Guiding e-learning: Introducing online informal learning to a global voluntary organisation', *British Journal of Educational Technology*, vol. 44, no. 2, pp. 39-41.

Zhang, K 2005, 'China's Online Education: Rhetoric and Realities', in Carr-Chellman, AA (ed.), *Global Perspectives on E-Learning: Rhetoric and Reality*, Sage, Thousand Oaks, pp. 21-34.

Acknowledgement

First author would like to acknowledge the Commonwealth of Learning for sponsoring the presentation of this paper at the Unisa Cambridge International Conference on Open, Distance and eLearning, 29th September – 2nd October 2013, Cape Town, South Africa.