THE USE OF ICT SYSTEMS TO TRANSFORM TEACHING AND OPEN LEARNING IN THE UNIVERSITY OF THE WEST INDIES

UWI POLICY BRIEF

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CONTENT

1.0 INTRODUCTION

A nation's economic development depends critically on the presence of an educated and skilled workforce and on strategic improvements in Information and communication technology (ICT) that raises productivity (Williams et al, 2012). The University of the West Indies (UWI) is a regional institution, supported by 15 member countries in the Caribbean, consequently, ICT applications in teaching and learning are critical success factors for ensuring the regional reach in tertiary education. To understand the potential of ICT in the development of tertiary education in the region, it is important first to understand the vision of regional Governments with respect to their shared objectives on tertiary level education. Regional Governments seek to widen access to tertiary education through assisted student tuition funding, as in the example of Government Assistance to Tuition Exemption (GATE) in Trinidad and Tobago; to raise the quality of educational outcomes through accreditation, as the example of the four UWI campuses and to keep costs low so as to maximize the value of Government's investment in the region's human development.

The main objective of this policy brief is to fully understand how the efficient management and implementation of the UWI ICT systems can be applied to improve the quality of online programme delivery so as to acquire a competitive advantage in the region.

ICT is both a driver and a facilitator for the spread of education in the region. It is a driver because educators realize that the combination of digitally based ICT systems gives more powerful possibilities for extending and improving learning, teaching and training than all previous educational technologies from the blackboard to television (UNESCO, 2012). Much of teaching and learning is about the manipulation of symbols, whether those symbols are words, numbers, formulae or images. According to UNESCO (2012) ICT systems are qualitatively different from previous instructional 'aids' in their power to help manipulate symbols. ICT is a facilitator because the Internet is an extraordinary means for the wide, low-cost distribution of educational material. As the Internet has also become a vehicle for interaction, its potential for teaching and learning has become even more significant and meaningful.

According to UNESCO (2012), the exception to the generally hesitant approach that public higher education has taken to online learning is the 'Open' Universities, which are, large distance teaching institutions that enroll over a hundred thousand students (e.g. the UK Open University) or even over a million students (e.g. India's Indira Gandhi National Open University). These institutions have deployed ICT at scale, for many years in both teaching and administration. Regional research has also shown that there were 60 medical schools operating in the Caribbean in 2011 of which, 29 were regional and 31 were offshore (Wikipedia Encyclopedia, 2011).

Efficient ICT implementation is an essential requirement for improved education management and for the delivery of the UWI programmes. ICT systems have to be efficiently implemented and properly supported to ensure the operational and administrative functions of Teaching, Open Learning, Research and Innovation and the efficiency of its enterprise-wide management systems are sustainable and that it maintains cutting-edge. ICT applications are intended to be used primarily as business tools and to provide other support services.

The Campus Information Technology Services department on each of the UWI campuses is responsible and accountable for all aspects of the design, implementation, administration and maintenance of all ICT systems and their respective operational processes and procedures (ICT Security Policy, 2008). Consequently it is imperative that these Campus ICT departments are staffed adequately so that they can play a major role in open learning.

Consequently the efficient use of ICT systems and the management of the UWI ICT infrastructure are critical success factors for the geographic reach of education in the region and moreover, for the UWI to become internationally competitive and sustainable.

2.0 LITERATURE REVIEW

According to a 2011 UNESCO policy brief, Open Learning (OL) is usefully divided into **traditional** (no use of ICT), **blended** (uses ICT for resources and communication, but also uses study centres, physical materials, and fieldwork), and **wholly online** (uses only ICT for resources and communication). The value of OL that uses ICT is its potential for **scale** (its ability to handle very large numbers of students), and **reach** (its ability to provide access to education at any place at any time) as in the case of the UWI Open Campus which serves the non-campus countries (UNESCO, 2011).

The forms of ICT used in OL extend to almost all the digital technologies now available, including administrative systems, virtual learning environments, content management systems, digital libraries, interactive resources, user-generated content tools, modeling tools, and synchronous and asynchronous online collaboration and communication environments using text, audio or video, or combinations of these media (UNESCO, 2011). Much of the tremendous potential of ICT for global learning, teaching and training comes together in open educational resources (OERs). OERs are defined as electronic resources based on the use of ICT, whose design, production, dissemination and sharing are supported by new technologies (UNESCO, 2011).

OERs driven projects such as the Single Virtual Library System (SVLS) and the Single Virtual University Space (SVUS) are two major projects being undertaken by the UWI to strengthen regionality. There have been other key ICT initiatives at the UWI, namely, ICT Governance Structure, ICT Strategic Plan to complement the UWI's Strategic Plan, Information Strategy, Caribbean Knowledge and Learning Network (CKLN), Policy and Implementation Strategy for Blended Learning and an Open and Distance Learning Policy.

It is this capability of ICT that enables the teacher to represent teaching without a personal physical presence, which makes it viable to transfer teaching from variable-cost activities (such as lectures, labs, tutorials) to fixed-cost activities (such as multimodal web resources, simulations, peer support activities), and still maintain, or even improve the quality of the student learning experience.

The fixed cost of designing and producing the tools, environments, or activities can be high, but they can be rich enough to provide many students with many hours of productive learning activity that does not involve the teacher, and yet has high value for the learner because of the adaptive feedback and/or their interaction with other learners (UNESCO, 2012). Tamim et al (2011) further opined that if these benefits are achieved, and if student numbers are high, then per capita costs can be low enough to achieve an improved cost-benefit analysis. The achievement of these kinds of pedagogical benefits is critically dependent, however, on the way the technology is used, which is governed by factors such as the goals of instruction, quality of pedagogy and teacher effectiveness (Tamim et al, 2011).

There are three main categories of ICT/OER benefits, each of which is elaborated below in terms of the types of benefits discussed in a range of reports and studies that can be applicable to all forms of provision of Open Learning (Bates, 2001; Kukulska-Hulme, 2010; Laurillard, 2006; Pelgrum and Law, 2003):

i. **Performance** – quality of the learning experience for teachers and learners; active independent learning; community of learners; learning outcomes; student satisfaction; staff satisfaction; social and cognitive legacy (who and what you know); impact on learners' life and work; student retention; organisational innovation; organizational efficiency.
ii. **Logistics** – access to geographic areas; access to socio-economic groups; flexibility in time, place, and pace.
iii. **Societal impact** – social mobility, workforce skills, workplace learning, employment levels, environment and institutional reputation.

According to a UNESCO (2011) report, the societal benefits of social mobility and an educated workforce that 'education for all' aims to achieve can only be made possible through the logistical benefits of widening access to education. ICT in OL contributes to this by providing the flexibility and local access that makes it possible for people to study alongside work and family commitments, that is, at low **opportunity cost** to the student. However, this is critically dependent on the provision of equipment and connectivity at low cost to those potential students in the region.

It is to be noted that University Library computing technology, communication technology and mass storage technology are some other areas of continuous development in ICT that reshape the way that learners access OL, specifically, for library documents, retrieval, storage, manipulation and to disseminate archive information. According to Krubu and Osawaru (2011) ICT presents an opportunity to provide value-added information services and access to a wide variety of digital based information resources to all university stakeholders.

According to UNESCO (2012) ICT contributes to overall student satisfaction by enhancing the quality of the learning experience in many ways (if its wide-ranging capabilities are properly exploited). The UNESCO (2012) report further explained that the pedagogic value of social learning which fosters active independent learning through interaction between students; through the application of theory to practice; and through reflection and adaptation of practice, is well served by the judicious exploitation of learning technologies.

This is further explained as follows:

i. **Active learning** – using multimodal technologies of dissemination and representation to present concepts, ideas and analyses in ways that engage learners' attention by including analytical and inquiry learning activities that students can work through at their own pace,
ii. **Independent social learning** – using online technologies enable learners to benefit from their participation in academic social networks, and better access to peer support, so that learner support can be extended beyond the teacher to other learners,
iii. **Adaptive, personalised learning** – using simulation and modeling environments that provide intensive practice on intellectual or skill-oriented challenges with meaningful personalised feedback adapted to learner input, so that learners use their independent learning time even more and,
iv. **Collaborative learning** – using user-generated content tools (e.g. digital documents, virtual 3D environments, videos, spreadsheets), and online discussion environments to enable learners to work together on sharing and building a product of their collective understanding or skill, to submit to their peers for constructive comment, and then to the teacher for formative feedback.

According to Bates (2011) students are opting for online learning in large numbers. Four key trends in the United States (US) higher education system were identified as follows:

i. The rapid growth of online learning. Enrolment in fully online (distance) courses in the USA expanded by 21% between 2009 and 2010 compared to a 2% expansion in campus-based enrolments,

ii. This growth is accelerating. Bates projected that over 80% of US students are likely to be taking courses online in 2014, up from 44% in 2009,

iii. The US for-profit sector has a much higher proportion of the total online market (32%) than its share of the overall higher education market (7%). Seven of the ten US institutions with the highest online enrolments are for-profits. Being already well established in this delivery mode, the for-profit providers are likely to reap the advantage of student preference for online delivery. Furthermore the for-profits are better placed to expand online because they face less resistance from academic staff and need not worry about exploiting an earlier investment in campus facilities, and,

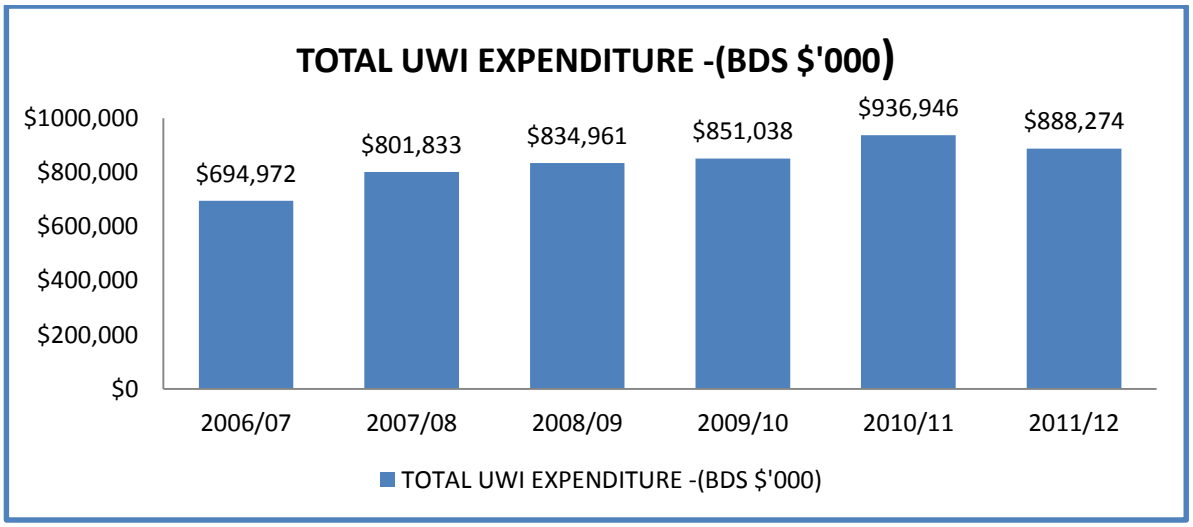
iv. The public sector higher education do not have ambitious goals for online learning. Bates (2011) further explains that the intelligent use of technology could help higher education to accommodate more students, improve learning outcomes, provide more flexible access and do all this at less cost.

However, Bates (2011) found that costs were rising because investment in ICT and staff is increasing without replacing other important activities. He opined that there is little evidence of improved learning outcomes and often a failure to meet best quality standards for online learning if the necessary infrastructure is not in place.

3.0 IMPLICATIONS FOR UWI

The UWI must implement a cost-benefit framework to evaluate the balance of costs, both fixed and variable, against the value of the benefits to students and the various campuses. It must also take into account the ways in which OER/ICT can be used to reduce costs and increase benefits to all stakeholders, given the economic climate of the region and UWI's increasing expenditure from approximately BDS$695,000 in 2006/7 to BDS$937,000 in 2010/11 (See Figure 1).

Figure 1 – UWI's Total Expenditure 2006/2007- 2011/2012



Some major ICT initiatives implemented by the UWI to date are namely, improvement to ICT Governance Structure, ICT development in the Strategic Plan to complement the UWI's Strategic Plan, Information Strategy development, Caribbean Knowledge and Learning Network (CKLN), Policy and Implementation Strategy for Blended Learning and an Open and Distance Learning Policy.

The UWI implementation of the Single Virtual Library Space (SVLS) is one such major ICT supported project that meets global best practices. According to Krubu and Osawaru (2011) ICT systems have brought unprecedented changes and transformation to academic library and information services (LIS). Conventional LIS, users services, reference services, bibliographic services, current awareness services, document delivery, inter-library loan, audio visual services and customer relations can be provided more efficiently and effectively using ICT systems, as they offer convenient time, place, cost effectiveness, faster and most-up-to-date dissemination and end users involvement in the library and information services process than before.

Moreover, ICT initiatives are progressing at a fast pace globally and are readily available to improve the UWI campus operating systems. However, this has to be implemented and linked to an enterprise-wide platform to be of overall value to the UWI. The reduction of costs for maintained or improved benefits can be achieved through the careful use and implementation of relevant enterprise-wide ICT management systems.

Several critical dependencies have been identified, which constitute some policy recommendations, taken from a UNESCO (2012) Policy Brief for ICT improvements in the tertiary education sector.

These policy recommendations can also benefit the UWI's ICT/OL position as follows:

a) Manage the ICT infrastructure to improve enterprise resource planning (ERP),
b) Invest in and manage teaching development and teacher training to ensure ICT increases active and personalised learning,
c) Increase and carefully design peer support activities to reduce costs and increase social and collaborative learning,
d) Increase group sizes to reduce variable costs, while maintaining the quality of the learning experience through more social and collaborative learning,
e) Convert student enrolment services to an online one-stop registration system,
f) Increase student numbers and retention to reduce per capita costs,
g) Convert all resources to digital to reduce fixed costs,
h) Promote reuse and sharing of resources among teachers to reduce fixed costs,
i) Establish a more direct link between teaching activity cost and return within institutional budgeting to encourage collaboration.

Some of these recommendations have been discussed at the UWI Board level and some have been implemented on some campuses.

4.0 CONCLUSION

According to Akuegwu et al (2011) ICT/OL systems transform teaching and help teachers to be more efficient and effective, thereby increasing their interests in teaching and learning. The efficient application of ICT/OL systems can assist the UWI with administrative and operational competencies, thereby promoting rethinking and revision of teaching and learning, library, human resource, plant and maintenance, planning and overall operational strategies to the benefit of all university stakeholders.

Applying enterprise-wide ICT systems for online programme delivery can provide university teaching staff with opportunities for experimenting and applying cost effectiveness, by using emerging technologies for overall cost benefit and return on investment in the four campuses. The strategy of an enterprise-wide ICT systems is also supported by Downes (2012) in which he opined that ICT systems can provide the basis for developing a "*core competency*" within a highly competitive tertiary education environment in the region, and that the UWI can enhance a competitive advantage through the strategic deployment of ICT within the six perspectives of its present University Strategic Plan. This initiative is presently being pursued by the UWI planning department.

One of the reasons for the success in the region of the for-profit foreign Universities in online learning is that they operate their University as efficient business systems and use a team approach to course development and student support (UNESCO, 2012). In contrast, according to UNESCO (2012) most public institutions usually simply rely on individual academics to create and support online versions of their classroom course. Bates (2011) calls this the 'Lone Ranger' model and argues that it is less likely to produce sustainable online learning of quality than the team approach.

Moreover, if these trends continue, public tertiary institutions who do not adapt their corporate structures and operational processes to the demands of online learning and teaching, could see an important reconfiguration of education strategies and a future drop in student enrolment (UNESCO, 2012). The UWI would now have to contemplate if to continue to be just a regional public sector university, focused mainly on research and innovation with relevance to the socio-economic improvement of the region or for the UWI to fully implement an enterprise-wide ICT system to improve Open Learning efficiencies with an aim to widen their tertiary reach and make the delivery of tertiary education more amicable to Caribbean students rather than the offerings by the many for-profit foreign Universities in the region.

(END)

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