Closing the Digital Divide in Trinidad and Tobago: the experience of Community-based Learning Centres.

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Abstract
The twenty-first century world of information technology faces the challenge of closing the digital divide i.e. the widening gap between the 'haves' and the 'have nots' in the access to, and use of, information technology. Closing this divide poses a greater challenge to small states like Trinidad and Tobago where the presence of the divide was confirmed in 2003. The government of Trinidad and Tobago adopted three initiatives to date in its attempt to close the divide, one of which was the pilot community based learning centre project over the 1999 – 2001 period.

This paper reviews the theoretical link between community-based learning centres and the elimination of the digital divide prior to presenting the results of an assessment of the pilot project . The paper concludes with recommendations for enhancing the effectiveness of community-based learning centres in the country. Some of these recommendations are already incorporated in the country's National ICT Plan. Accordingly, the paper argues that the country's government must intensify efforts at closing the broader social and economic divides that give rise to the digital divide, and move quickly to add the leadership and capacity required to fast track the implementation of the National ICT Plan.

Introduction
The digital divide1 and its implications for development in small states have been discussed in the literature e.g. Carnoy (1995), Shukla and Rogers (2001), Perraton (2002), CAPDD (2002), and Harris (2004). Examples of strategic approaches adopted by countries and international agencies to eliminate the divide are found in ILO (2001), CAPDD (2002), CIDA (2003), and Lallana (2004). The concept of the telecentre or telecottage and its role in the context of distance education, flexible learning and the digital divide in developing and first world countries are also discussed in the literature, e.g. Latchem and Walker (2001), and Rogers and Shukla (2002).

This paper focuses on Trinidad and Tobago- a developing economy that experienced an 87.4% increase in real GDP2 and the longest period of persistent economic growth since the oil boom of the 1970's during the period 1990 - 20043; resulting in falling unemployment and a stable inflation rate for the period as shown in Figure 1 below.

Figure 1. Selected Performance Indicators for the Trinidad and Tobago Economy 1995 - 2004

Source: Ministry of Finance – Review of the Economy (various years)

Domestic and global assessments of Trinidad and Tobago's level of "e-readiness", completed in 2003, confirmed the presence of the divide, rated the country's electronic marketplace as underdeveloped, established a baseline for the development of the country's NICT Plan, and identified several barriers to increasing the level of ICT usage among the general population.

"These include the high cost of computer ownership, the high cost of Internet access, the available Internet speed , virtually no community access to computers and the Internet for those who cannot afford home PCs. The percentage of households with computers was estimated to be only 16% in 2003 with a mere 9% of the general population being regular Internet users" (GoRTT 2004; 21) .

Table 1 provides a comparative evaluation of the technology status of Trinidad and Tobago and a sample of countries of varying HDI rank.

Table 1 : Technology Status vs. HDI Rank

Technology Diffusion & Creation Parameter	Singapore (Rank 25)	Barbados (Rank 30)	Trinidad & Tobago (Rank 57)	Malaysia (Rank 61)	Mauritius (Rank 65)
Telephone Mainlines (per 1000 people					
-1990	346	281	141	89	52
-2003	450	497	255	182	285
Cellular Subscribers (per 1000 people)					
-1990	17	0	0	5	2
-2003	852	519	399	442	267
Internet Users (per 1000 people)					
-1990	0	0	0	0	0
-2003	509	371	117	344	123
R & D Expenditure (% of GDP) 1997-2002	2.2	na	0.1	0.7	0.3
Researchers in R & D (per million people)	4,352	na	347	294	na

Source: UNDP Human Development Report (2005)

The results of these assessments point to the necessity for Trinidad and Tobago to develop and implement policies to bridge the information divide across the country; a divide that threatens to reinforce inequalities in wealth (Perraton 2002: 1). Thus far, the country's response to the digital divide can be characterised by four initiatives:

1. the inclusion of IT in the curriculum of secondary schools and tertiary institutions;
2. the pilot community based learning centre project over the 1999 – 2001 period as an initial step in developing a national learning system in the country (Sampson-Ovid 2000);
3. the removal of import taxes, duties and VAT on computer equipment; and
4. the development of a National ICT Plan.

Available data revealed that by 2005, tertiary level IT training was being provided at state funded tertiary institutions i.e. UWI, COSTATT and UTT, and at least 17 private tertiary institutions e.g. ROYTEC, SBCS and SAM. Table 2 shows the performance of the minority of the country's 30,000 Fifth and Sixth Form students who wrote IT examinations at the CXC4 CAPE and the Cambridge5 GCE Advanced levels.

Table 2: Performance of Schools in Trinidad and Tobago in IT Examinations 2005

Examination No.	Registered No. who sat the Final Exam	No. who sat the Final Exam	No. who passed the Final Exam	% Passed
CXC CSEC	3470	2964	1644	55.5%
CXC CAPE Unit I – Computer Science	59	47	45	95.7%
CXC CAPE Unit I – IT	41	33	29	87.8%
CXC CAPE Unit II	39	29	23	79.3%
CAMBRIDGE GCE Advanced Level – Computer Science	40	40	27	67.5%

Source – Ministry of Education Press Advertisement, Sunday Guardian October 16, 2005

This paper reviews the second initiative mentioned above i.e. the pilot community-based learning centre program. It is divided into four parts. The first part summarises the literature on the digital divide and strategic approaches taken by countries and international agencies to eliminate this divide. The second section links community-based learning centres to the elimination of the digital divide. The third section presents the findings of a survey of graduates from the community-based learning centres program in Trinidad and Tobago. The paper concludes with suggestions for going beyond the pilot and enhancing the effectiveness of these centres.

1. The Digital Divide – A Literature Review

According to CAPDD (2002; 51-52) the term 'digital divide' refers to the differential between those persons with access to a particular product or service and those without it – and to the consequential relative advantages and disadvantages of this differential access. It is a relative concept that measures the differentials between different groups. A growing digital divide does not mean that citizens and communities on the wrong side of the divide are losing out in absolute terms – they may, in fact, be making significant social and economic gains at relatively low levels of access, but also falling further behind their better-served contemporaries in terms of equity. The divide has been discerned in four scenarios around the world, namely:

i. between countries;
ii. between different countries within geographical regions;
iii. within countries, between different geographical areas e.g. urban vs rural; and
iv. within countries, between different income or social groups e.g. men vs women, rich vs poor, young vs old, literate vs illiterate.

Harris (2004:8) observed that the uneven global distribution of access to the Internet has highlighted a digital divide that separates individuals who are able to access computers and the Internet from those who have no opportunity to do so. Cole and others (2000) recorded that the Internet was adopted by about 60% of adults in the United States by the year 2000; these users were advantaged socio-economically, racially, and in urban-rural residence. The digital divide becomes even more pronounced when consideration is given to the comparative sizes of Internet users in the various regions of the world in Figure 2 below.

Figure 2

Data Source: Rogers and Shukla (2001)

Conceptually, the digital divide is viewed in G8 DOT Force Report (2001)6 and ILO (2001)7 as a reflection of existing broader socio-economic inequalities, and a symptom of much more profound and long-standing economic and social divides within and between societies. Rogers and Shukla (2002) argued that the digital divide bears similarities to previous conceptualizations of the knowledge gap hypothesis cited in Tichenor and others (1970). Harris (2004:11), on the other hand, views the digital divide as multidimensional with the dimensions implying a variety of societal concerns that have to do with education, capacity building, social equity inclusive of gender equity, and the appropriateness of technology and information to its socio-economic context.

Divisions between the information-rich and information-poor that exist within the digital divide, are important to policy makers as they reflect a new division of labour. Carnoy (1995: 212) argued that this division is based less on the location of natural resources, cheap and abundant labour or even capital stock, but more on the capacity to create new knowledge and apply it rapidly through information and telecommunications to a wide range of human activities in ever-broadening space and time.

2. Closing the Digital Divide

Eliminating the digital divide is critical to eliminating the disparities in access to education, health care, capital, shelter, employment, clean water supply and food across developing countries. In short, its elimination is necessary for the development process. Since as CIDA (2003) suggests, information and knowledge are among the resources fundamental to the development process, it follows that strategies for eliminating the digital divide must be linked to increased access and use of information and knowledge. This approach is reflected in initiatives such as the "Genoa Plan of Action" and the New Partnership for Africa's Development (NEPAD) strategy. See ILO (2001)7, CIDA (2003), and G8 DOT Summit (2001).

ICTs offer new ways of providing access to information and knowledge, and thereby create significant opportunities for learning; networking, social organization and participation; and improving transparency and accountability. While the literature is vocal about the potential of ICT, Lallana (2004: 38 – 47), ILO (2001), Harris (2004:11), and Martin and McKeown (1993) suggest that some caution be exercised in using ICTs to eliminate the digital divide.

At the international level, the digital divide will continue to grow if only a select number of countries reap the benefits of ICTs while others continue to lag behind. In this regard, CIDA (2003) points out that there is a danger of exacerbating this disparity between developed and developing countries, and recommends action that focuses on pro-poor strategies emphasizing provision of rural infrastructure, access of women and the disenfranchised, capacity building and training, as well as the creation and dissemination of local content in local languages.

3. Linking Community Access Centres with Closing the Digital Divide

Community Access Centres, also called telecottages and telecentres, are 'community based' facilities that exist to assist local communities in learning, access to technology and access to work etc. According to Latchem & Walker (2001), telecentres can be viewed as strategically located facilities that provide access to ICT based services and applications. The telecottage started in Sweden and has been embraced in the UK where at last count over 200 telecottages existed. Depending on location (rural or urban) and country (developed or developing), they vary in size, facilities and services, ranging from basic telecommunication services such as "phone shops" to fully interactive Internet–based training. Psychologically, telecentres can work to dispel the fears and myths about technology. Examples of telecentres can be found in Canada, UK, Hungary, Latin America, India, other parts of Africa – Mozambique, South Africa, Dar es Salaam, Uganda.

Encouraging the cutover of telecentres is a key strategy for bridging the digital divide within a nation, and between nations, but on specific grounds documented in Rogers and Shukla (2002).

4. Survey of Pilot Community-based Learning Centres Program

The Government of Trinidad and Tobago approved in 1997 a Distance Learning System (DLS) that would promote and pursue the concept of lifelong learning using existing and emerging information and communication technologies. A pilot community based distance learning program was established as a critical partnership endeavour within the DLS to offer computer literacy courses as a prelude to the introduction of advanced training. Graduates of the computer literacy courses were expected to qualify for access to online training courses in such areas as SAT Preparation, A+ Certification, Networking Essentials, Mathematics and Grammar Skills (Sampson-Ovid 2000). Nineteen centers were launched during the period April 1999 to December 20018 thereby giving the pilot program a spread as shown below.

Table 3 Distribution of Community-based Learning Centres as at December 2001

County/ City	Port of Spain	San Fernando	St. Andrew	St. Patrick	Nariva/ Mayaro	Victoria	St. George	Caroni	Tobago

No. of Centres	1	1	1	1	1	3	5	5	1

Source: Distance Learning Secretariat

4.1 Survey Methodology

The duration of the pilot and the status of the records of the program in 2002 did not allow for the typical assessment9 of distance learning programs to be made. A survey was undertaken in 2002 to measure the contribution of the pilot community-based learning centres program to closing the digital divide and other related divides. The methodology for this study reflects a mix of qualitative and quantitative research. The qualitative research took the form of a document search on the program and in-depth interviews with a sample of Managers, Course Facilitators and graduates of the centres.

The quantitative research took the form of a tracer study of 110 graduates of the Program in Trinidad10 over the period 1999 to 200111. A quota sampling design was employed since no sampling frame existed for this population. Data collection was executed through the use of a structured questionnaire that was administered in a face-to-face mode. This questionnaire sought feedback on issues of access, motivation, demographics, expectations, benefits, plans for further development, and obstacles encountered in making use of the acquired skills. The composition of the achieved sample is shown in Table 4.

Table 4: Quota allocated to Community-based Learning Centres

Centre	Quota	Centre	Quota
Pinto	20	Brazil	10
Couva	18	Mayaro	10
Arouca	4	Cocorite	10
Toco	10	Barrackpore	8
Moruga	10	Les Efforts	10

4.2 Survey Findings

The majority of the students in the sample were female in the age group 31 – 39 from households with median income of $2000 –$2999 per month, and in possession of a secondary education up to the CXC level; these entered the pilot program with the expectation of obtaining certification that would be acceptable to employers. Information on the program was accessed in the main from relatives and friends. Students deemed the fees charged on the pilot program to be affordable. Computer Literacy was their most popular course.

The data point to the potential of the Program to offer public access to computers and other communication technologies and provide training in computer literacy, software packages and the Internet in both the rural and urban areas; this is critical to closing the digital divide in the country. However, the ownership of computers by individuals is still a challenge.

The data also suggest that the Program has the potential to add to human capital formation and contribute to widening the scope of employment opportunities for participants. Furthermore, there was tangible demonstration of behavior change by the students after completing the Program in terms of adding to their non-human capital. This finding suggests that the Program can be viewed as a transformative measure in the context of social protection (Devereux et. al. 2004) - a significant finding given the link between poverty and the digital divide. A significant proportion of the sample indicated an interest in pursuing other courses by the distance mode or even a professional qualification suggesting that the Program has the capability of honing the skills required by the individual to make the choices necessary for transforming endowments into income.

Enhancing the Community-based Learning Centres

Notwithstanding the achievements of the Pilot Program, forty-nine percent (49%) of the sample offered suggestions for its enhancement/expansion; these relate to seven

broad issues viz. the Range of Course Offerings, Accreditation, Course Facilitation, Facilities, Program Administration, Advertising and Student Assistance.
In moving to the next phase of the Program, the Government of Trinidad and Tobago must recognize the key realities below as identified by Harris (2004:11):

1. The real concern must be the information and knowledge gap.
2. Money and technology do not matter; rather the right approach matters. Unless other divides are also addressed, crossing the digital divide will not achieve much.
3. The pattern of cause and effect must be understood in the context of the digital divide and the broader social and economic divides.

The literature, Harris (2004) and Rogers and Shukla (2002), provide additional prescriptions for enhancing the Program, namely:

1. ensuring that a well developed information infrastructure is in place to support the learning centres;
2. adherence to principles of integrated rural development;
3. ensuring that the Program is rooted in, and subordinate to, a broader strategy to combat poverty;
4. a sustained focus on pro-poor strategies that emphasize access to women and the disenfranchised, capacity building and training, as well as the creation and dissemination of local content in local languages; and
5. the addition of help desk services to the suite of offerings at the learning centres as these are critical to providing public access to the Internet .

Some of these issues are to be addressed by the Government of Trinidad and Tobago as part of the implementation of the promulgated National ICT Plan. (GoRTT 2004: ii-iv). Unfortunately, delays in the implementation of the Plan as at December 2005 had the effect of making the Plan almost invisible to one of its key stakeholders, i.e. civil society.

Conclusion
This paper has reviewed the role of community access centres in closing the digital divide. It has also presented empirical data on the pilot community-based learning centres project in Trinidad and Tobago and assessed this project in the context of the divide. Indeed, there were lessons learnt from the experience of the pilot program; these can inform the design of the Community Access Centres Initiative and the Skills & Knowledge for the Information Era (SKIE) Programme under the aegis of the National ICT Plan. Furthermore, this paper presented that the National ICT Plan as a vehicle for the implementation of a sustained nationwide community-based learning centres program in Trinidad and Tobago. The Government of Trinidad and Tobago must now meet the challenge of (a) quickly gaining an understanding of the pattern of cause and effect in the context of the digital divide and the broader social and economic divides, (b) implementing a plan of action to address these divides, and, (c) adding the leadership and capacity required to fast track the implementation of the National ICT Plan.

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ENDNOTES

1. i.e. the widening gap between the 'haves' and the 'have nots' in the world of information technology
2. From TT$35,725 million in 1990 to TT$ 66,026.3 million in 2004 at constant prices. (Ministry of Finance – Review of the Economy for the years 1990 to 2004)
3. Real GDP in 1994 = TT$36,824.1 mn
4. Caribbean Examinations Council
5. University of Cambridge
6. Cited in CIDA (2003)
7. Cited in Harris (2002: 4)
8. In the areas of Toco, Munroe Road, Couva North, Couva South, Todd's Road, La Cuesa-Freeport, Arouca, Mayaro, Brazil, Barrackpore, Carenage, Cocorite,
9. Laventille East, Cedros, 5th Company-Moruga, Les Effort West, Arima and Scarborough.

10. Distance Learning programs are generally assessed in terms of their levels of access, pass rates and dropout rates.
11. The lone centre to be launched in Tobago never commenced operations.
12. 8914 persons registered in seventeen (17) areas according to the Distance Learning Secretariat

Figures

Figure 1. Selected Performance Indicators for the Trinidad and Tobago Economy 1995 - 2004

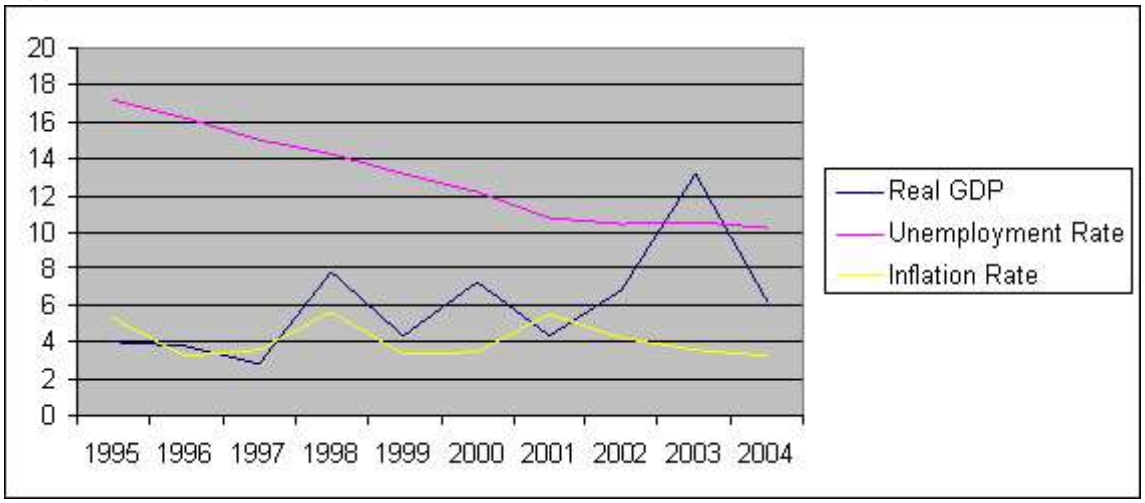
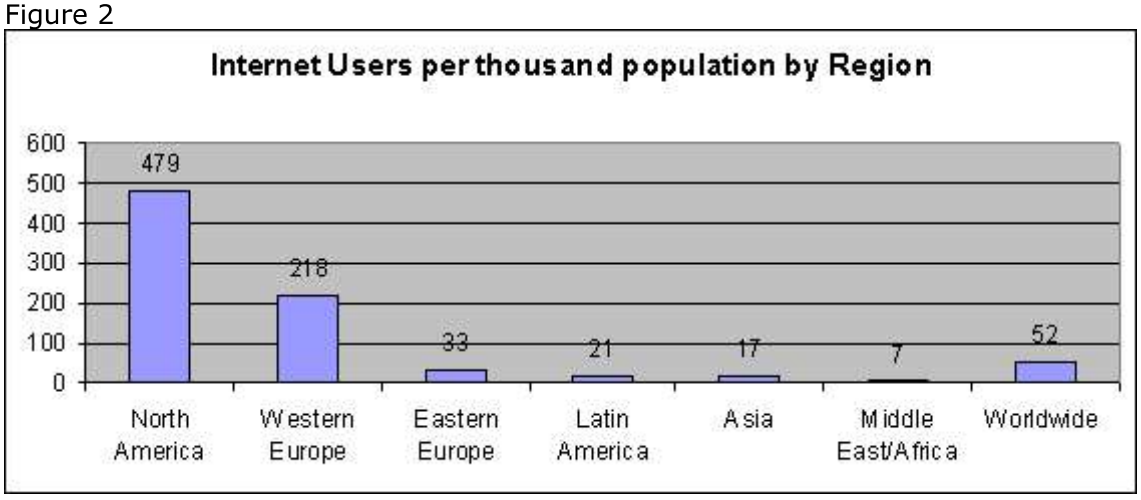


Figure 2



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