

Bridging the Digital Divide through NGOs

A Study of Information Software Personnel Vocational Training Program

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Abstract

The issue of the digital divide has become a critical aspect of inequality and social injustice in our world particular after the first report “Falling Through the Net” issued by NTIA in 1995. The focus of recent studies on the digital divide, however, seems to shift from the issue of physical access to information technology (IT) and the Internet to that of content and training. This paper has studied the effectiveness of the vocational training programs offered by for-profit non-government organizations (NGOs) and subsidized by Taiwan Government in an attempt to narrowing the information gap. The exploratory case study has found that by providing convenient locations and better employment opportunities, NGOs offered the information “have-nots” an alternative to bridge the information gap. However, NGOs and government should pay more attention on the problems associated with the subsidy scheme and the course design to improve the effectiveness of the vocational training programs.

Key Words: digital divide, NGOs, training, policy.

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The Internet: Digital Opportunity or Digital Divide

Enabled by the computer technology and particularly the rapid growth of personal computers and local area networks in the 1980s and 1990s, the Internet has evolved into a powerful channel of communication for businesses, governments, and individuals, offering lots of tremendous opportunities such as electronic commerce, electronic government, and electronic education. The Internet, term coined in 1983, came “on-line” when ARPANET (so called after the Advanced Research Projects Agency) was established in 1969, seven years after John Licklider published a memo describing a globally interconnected set of computers that would provide access to data and computer programs from anywhere (Oz, 2002:2-3). In two decades, particularly the implementation of world wide web (WWW) that incorporates the use of hypertext links, software portability, and network and socket programming, the Internet has become a key platform for information dissemination and exchange (Awad, 2002; Greenstein and Feinman, 2000; King et al., 2002; Laudon and Laudon, 2004).

That the Internet being a mass media has led some researchers to discern the capacity of computerized communication network to generate new social formations, freed from place and traditional institutional constraints (Barlow, 1994; Dyson, 1997; Gates, 1995; Katz, 1997; Meeks, 1997; Mitchell, 1995; Rushkof, 1994; Schuler, 1996; Toffler and Toffler, 1995). The computerized Internet also plays a role in democracy as it is relatively cheap, compared to the costs of traditional media publishing, to enlarge freedom of speech and equality of access to public debates (Rheingold, 1993; Schuler, 1996). The anonymity in online exchange of information has encouraged authentic dialogue between people without the constraints of their social, racial, or gender background (Poster, 1997;

Turkle, 1995; Rheingold, 1993; Watson, 1997). Computer-mediated communication through the Internet has become a part of everyday life activity (Haythornthwaite and Wellman, 2003).

Concerns and critics about the Internet's promising position in society involve issues such as social atomization (Nie, 2000), social isolation effects (Markoff, 2000, Nie, 2001; Putnam, 1995), and weakening social responsibility (Seabrook, 1997; Slouka, 1995). Apart from concerns about social effects, other concerns about the ease of the access to computers and the Internet have been raised under the notion of digital divide (Barbrook and Cameron, 1995; Boal, 1995; Castells, 1996; Downey and McGuigan, 1999; McConnaughey, et al., 1998).

The Scope of the Digital Divide

The knowledge gap theory proposed by Tichenor and Olien (1975) first addressed the problem of digital divide. People at a higher socioeconomic position tend to obtain more and quicker information than those at a lower position. In 1995, the first report "Falling Through the Net" presented by the National Telecommunications and Information Administration (NTIA) of the US government documented the existence and particulars of a digital divide in America that separates people with access to information technology from those without it (US Department of Commerce, 1995). In defining the digital divide, NTIA (US Department of Commerce, 1999) found out that certain demographic and geographic breakdowns were significant determinants of a household's likelihood of owning a computer or accessing the Internet from home: income, race/origin, education, household type, age, region, and state. Education and income appear to be among the leading elements driving

the digital divide. Disability was later found as another dimension of the digital divide that required attention (US Department of Commerce, 2000).

The digital divide plays out globally. The divide falls along many of same lines in the United States. Income, cost of connection, education, gender, age, and language were identified as the key factors that determine the use of information technologies on an international basis (United Nations Development Program, 1999; United Nations Development Program, 2001).

Subsequent researchers tend to focus the issue of digital divide on other two aspects besides the access to the computers and the Internet: the Internet content and the skills to use information technology and the information itself. Servon (2002) argued that the technology gap should not be defined narrowly as a problem of access. Training¹ and content, should be included as other dimensions of the digital divide so that policy makers and programs to narrow the digital divide would not lose their focus. Training should include not only the typing exercises and drills but also the acquisition of the kind of skills and thinking to benefit from using the information provided by the computers and the Internet. Content or information on the Internet and software for computers should be directly related to lives, communities, and cultures for every level of the public, not only for information “haves.”

In Taiwan, according to a telephone interview of 2401 families (Tseng, 2002), 72.9% of the interviewees reported that they owned computer(s) at home and 58.8% of the interviewees could log on to the Internet. The digital divide remained between seniors and younger people,

¹ ‘or IT literacy – the ability to use IT for a range of purposes, and the knowledge of how and why IT can be used as a key resource’ (Servon, 2002: 7).

highly educated persons and low educated persons, rural and nonrural households, high-income persons and low-income persons. Gaps have begun to narrow when access to computers and the Internet is increasing rapidly when costs continue to drop. Tseng (2002) pointed out the difference between formal access and effective access from the fact that for 33% of the people who opted not to use the Internet mainly because they thought neither there was a need to be connected to the Internet nor did they have the interest and relevant knowledge to use the Internet.

Policies Tackling the Digital Divide

Around the world, for example, the Digital Opportunity Task Force, DOT Force, was initiated by G8 in year 2000 to promote the expansion of Internet access, usage, and development around the world; to advocate frameworks of policies and laws for information and communication technology; and to encourage the establishment of international electronic commerce network infrastructure.

In US, the attempts to bridge the digital divide have made policy makers, businesses, philanthropies, and other interest groups to come up with policies to assist the information “have-nots” (Borsook, 2000; Information Technology Industry Council, 2000; Jacobs, 1998; Seongcheol and Muth, 1999; Robertson, 2001; Wilhelm, 1999b). Examples of US government policies on the digital divide include the “E-rate,” Universal Service Assistance program, Rural Utilities Service Telecommunications Program, Neighborhood Networks Initiative, Community Technology Centers Program.

Similarly, Taiwan (ROC) Premier Yu Shyi-Kun (2003) has indicated that the state should try to bridge the digital divide, an issue

involving economy, society, education, labor, race, gender, technology, and culture. A Bridging the Digital Divide Supervision Committee, led by Minister of Education and Minister of Research, Development and Evaluation Commission, was formed to implement “Narrowing the Digital Divide Plan” in 2003. In addition, Taiwan government also proposed in APEC the “transform digital divide into digital opportunity” plan to assist members of APEC in developing electronic commerce and narrowing the information gap between members (NII, 2002).

Research Focus and Methodology

To have any significant effect, the narrowing of the digital divide must be enabled by effective public policies in cooperation with concerned efforts. The recognition of the important role of training in the battle against the digital divide, US government and NGOs jointly offer “Technology Opportunities Program” that subsidize training costs of upgrading computer skills for the information disadvantaged. Similarly, Taiwan Government has offered subsidies to NGOs for them to assist the vocational training in computer skills for the unemployed and persons qualified for the subsidy.

This paper, thus, documented the key efforts of Taiwan government in bridging the digital divide. The efforts were categorized into (1) the access to computers and the Internet in Taiwan, (2) the contents and services on the Internet, and (3) vocational training of computer skills.

Further, this paper attempted to understand the effectiveness of programs offered by for-profit non-government organizations (NGOs) that were subsidized by Taiwan Government in an attempt to narrowing the information gap. NGOs for this study refers to the five categories of

organizations set by Bureau of Employment and Vocational Training (BEVT) for information software programmers vocational training purpose: public and private universities, registered vocational training institutions, registered trustees, short-term cram schools or education center, and for-profit institutions.

A case study methodology was adopted for the study. One short-term computer education center in Kaohsiung was contacted to participate in the study. Thirty-two out of forty students from the class of “Multimedia Design Course,” one of the four subsidized courses under BEVT’s “Information Software Personnel Vocational Training Program,” had responded to the on-line questionnaire posted on the Internet at the beginning of November 2003. The students were asked about their (1) level of satisfaction on the center’s employment consultation services, (2) the quality of the course, (3) the effectiveness of increasing their employment opportunities, and (4) the evaluation on the government’s vocational training programs and courses. A Likert scale of five alternatives: strongly disagree, disagree, uncertain, agree, and strongly agree were used in each of the 10 questions on the questionnaire. Respondents indicated their attitudes by checking how strongly they agreed or disagreed with the constructed statements. The results were collected one month later at the end of November 2003 and were summarized in the following section.

Government Efforts in Bridging the Digital Divide in Taiwan

The Ease of the Access to Computers and the Internet

With the joint efforts of government, telecommunication institutions, and social institutions such as schools, libraries, and the Internet cafes,

barriers of the access to the Internet for the public have been gradually removed. While focusing on providing the ease of access to the Internet and the richness of contents on the Internet, training of computer skills have not been neglected. In 1998, the Ministry of Education of Taiwan (ROC) set up an ambitious initiative called “Expanded Internal Demand Project” to realize and expedite a mid-term “Information Education Infrastructure Construction Plan”. In this short-term project, Taiwan (ROC) has invested six billion four hundred and seventy million NT dollars (approximately two hundred million US dollars) to equip computer labs for every primary and secondary schools, to provide broad-band internet connection to every primary and secondary schools, and to popularize IT training for primary and secondary schools teachers. The goals are to popularize IT education, to facilitate IT education resources sharing, to integrate IT into education, to shorten digital divide – both locally and globally, and hence to enhance the competitiveness for the era of global competition.

More Contents and Services on the Internet

Contents on the Internet have continued to increase in both size and variety. Taiwan government is working on building e-government and e-Taiwan (Shi, 2002) that allow both the government staff and the public to retrieve, process, and exchange information on the Internet. Businesses increasingly implement e-business such as supply chain management, enterprise resource planning, on-line services, on-line purchasing, and the Internet banking. Education institutions are putting education on line as well as making distance education a reality. More and more contents and functions are available on the Internet, including

on line game, music, and video when broadband, ADSL for example, offers speedy access at a lower connection fee.

Vocational Training of Computer Skills

Among the programs of vocational training offered by BEVT of Taiwan (ROC), the program Specialized Vocational Training is designed for developing skilled manpower in information, software programming and emerging industries. As BEVT is mandated to carry out the planning and coordination of vocational training, BEVT adopts a market-driven approach to meet the current needs of employment market and industrial development for the knowledge economy. The market demand for information workers in terms of both quantity and quality is increasingly high. According to a survey of manpower demand between the year of 2003 and 2010 in Taiwan area, the number of information workers in need is 62,779 in the year of 2003 and 183,658 in 2010 (Information and Education, Vol. 93, 2003: 56). Over half of the businesses (51.5%) also pointed out that they were not satisfied with the adequacy of information skills workers possessed, particularly the new entrants.

Government has offered many computer skill training programs to the unemployed: for example, “Information Software Personnel Vocational Training Program,” “Short-Term Computer Skill Training Program for Involuntary Unemployed Labor,” “New Industry Human Resource Training Program for Focused Technologies,” “Computer Skill Training Vouchers,” “Basic Computer Skill Training Program for the Employed under “Expanded Public Service Project,” “Pre-Employment Training Program,” “Subsidies to Local Government Training Program

for the Unemployed,” “On the Job Training Program,” “Vocational Training Voucher,” and “Joint Training Program with Businesses.”

Participants in pre-employment and job transfer programs are responsible for their meal expense during the training period. Government subsidies for meals are available to single female householders, the middle and the old aged, the handicapped, aborigines and low-income individuals. Other training costs, including tuition fees, miscellaneous fees, training materials, and labor insurance premium, are shouldered by the government. Participants under arduous training programs or from low-income households are also entitled to a grant of NT\$10,000 every six months.

Effectiveness of Vocational Training Programs Offered by NGO

In our study of the 32 respondents who attended the center’s “Multimedia Design Course,” 28 (87.5%) indicated that the training location was convenient. When asked about the level of satisfaction on the center’s employment consultation services, our study confirmed that most respondents were either strongly satisfied or dissatisfied (See Table 1). A closer look into the results shows that most of our respondents agreed that the center offered sufficient details of job vacancy (87.50%) and sufficient numbers of employers (78.3%). However, only 43.75% of the respondents were either strongly satisfied or satisfied with the employment consultation provided by the center. The consultation services should be enhanced.

**Table 1: Trainees' Responses to Short-Term Computer Education
Center's Multimedia Design Course**

Questions	Strongly agree or agree	Un-certain	Strongly disagree or disagree
Center provides sufficient employment consultations	43.75%	37.50%	18.75%
Center provides sufficient job vacancies	87.50%	3.13%	9.38%
Center provides sufficient numbers of employers	78.13%	9.38%	12.50%
Center provides a convenient training location	87.50%	6.25%	6.25%
The course improves my job skills	12.50%	25.00%	62.50%
The lecturer is of professional level	15.63%	15.63%	68.75%
The course improves the chance of being employed	25.00%	15.63%	59.38%
The training program and course design is excellent	34.38%	21.88%	43.75%
The subsidy scheme for the program is fair	65.63%	21.88%	12.50%
Government provides sufficient employment consultation services after the training	6.25%	12.50%	81.25%

Surprisingly, our results reveal that in average over half of our respondents were dissatisfied with the quality of the course (65.63%) and the effectiveness of the training in increasing their employment opportunities (59.38%). For our respondents, the training seemed not able to improve a great deal of their job ability and skills. The contents of the course and the professionalism of the lecturer were questioned by our respondents. An interview with one of the center's managers exposed one controversial point. The manager pointed out that some students sit in the class simply for the subsidy offered by the government. Some of them could not cope with the volume of teaching materials and the assignments designed for adapting them to the real world. Students

who just wanted an easy time often bullied those lecturers who gave too much teaching materials or assignments in the class. However, our results show that about 15% to 20% of our respondents still held positive attitude toward the course and the lecturer.

Similarly, near half of our respondents (43.75%) gave negative evaluation to the content of government's specialized vocational training course. Neither were they (81.25%) satisfied with the employment consultation services. Interestingly, however, only 12.5% of our respondents were dissatisfied with the subsidy scheme because the subsidy scheme was too strict. One respondent pointed out that certain level of attendance was required in order to receive full subsidy. This might coincide with the manager's comments on the subsidy, attitudes, and intentions of our trainees.

Discussions and Implications

After the first report "Falling Through the Net" issued by NTIA in 1995, the digital divide seems to create a class of information "haves" and a class of information "have-nots". Since the digital divide concerns two "classes", the concept of class has to be brought into discussion when we talk about the digital divide.

Class, for Marx ([1867], 1976), was analyzed based upon production. Marx defined that owners of the means of production are the bourgeoisie or capitalists. The working class or proletariat in capitalist societies is employed by capitalists to use the means of production to produce goods or services for sale (Marx and Engels [1848] 1958: 34). For capitalists, digital technology, particularly the computer technology, has become a significant mean of production after the World War Two.

Thus, training existing workers to use computer technology or hiring new workers trained with computer skills has been important for capitalists.

For capitalists, or employers, education and training may enhance workers productivity and it is a cheaper screen tool of job applicants. Concerning that the termination of underperformed employees will incur lay-off costs and the losses associated with their mistakes, employers usually will screen job applicants through interviews, tests, and assessments of applicant educational attainment; or provide existing employees to learn to use new technology in order to improve their productivity (Ehrenberg and Smith, 1991).

Weber (1982a), on the other hand, proposed that class situation, the class circumstance of an individual, is based in the market. The class situation of an individual describes the particular combination of property and marketable skills she is able to bargain with in the market. Workers have to bargain with others for what they have for rewards in the market. Students or workers doing university courses or vocational training to improve their chances in the job market are trying to acquire the kinds of marketable skills to which Weber refers.

Our study has revealed that the vocational training programs provided by NGOs and subsidized by the government did bring more employment chances for the trainees, the information “have-nots”, in current economy that emphasizes the use of digital technology. For individuals, additional education or qualifications could mean an enhancement of one’s lifetime income or a new job. For economists, workers undertake investments: education and training, migration, and search for new jobs with initial cost in the hope and expectation that the investment will pay off well into the future. Job search is an activity

that increase the value of one's human capital by increasing the price (wage) received for a given stock of skills (Ehrenberg and Smith, 1991).

For government, the intent of providing training programs is to enhance private and social productivity by training workers, particularly those unemployed, to do jobs that are in demand. The government tends to believe that people with computer skills will be easier to find a job nowadays. Such government investments in training programs can be socially productive, but they can be costly to society if trained workers cannot benefit, getting a job for example, from having more education (Friendlander, Greenberg, and Robins, 1997). To ensure costs are justified against returns, BEVT has used the progressive payment method in the vocational training program contract. NGOs who provide training courses must present to BEVT three progressive reports in order to get paid in total. In addition, BEVT also encourages NGOs to find jobs for the trainees by providing a job referral bonus of NT\$4,000 to NGOs who successfully refers jobs to over 50% of the total number of trainees of the same class within 90 calendar days².

Our study has disclosed that the trainees were not satisfied with the course design since they found it too demanding. For course providers, however, course must be conducted according to the terms and proposed course design on the contract. As employers will hire competitive workers only, course design must be rigorous and competitive so that trainees will obtain required market skills, leading to a higher chance of being employed and the subsequent job referral bonus to the course providers. Certainly, easier course can be given and certificates of

² To receive job referral bonus, course providers who take part in the "Information Software Personnel Vocation Training Program" must provide an employment report to BEVT that clearly shows more than 50% of the trainees either find a job through the course provider or register their own business lawfully.

training can be obtained quicker and easily. Trainees may have a “diploma syndrome” as they may believe that more licenses and certificates does mean more competitive. However, if trainees are not well trained, their chance of being permanently employed will decrease and the efforts of the government and course provides are wasted.

Conclusions

Increased emphasis on the application of the Internet and information technology is vital to the transformation into an information society. The more we move into information society, the more education, in the broadest sense, becomes the foundation for real equal opportunity, indeed the foundation for a sustainable society. The more education and training, thus, may provide a chance for bridging the digital divide, a critical aspect of inequality and social injustice in our world. To have any significant effect, however, the narrowing of the digital divide must be enabled by effective public policies in cooperation with concerned efforts.

Training the public, particular the information “have-nots”, to use the digital technology and to obtain maximum benefits from using them wisely is decisive in bridging the digital divide. The state’s initiative to provide subsidized vocational training of computer skills to those digital disadvantaged workers, particularly the incorporation of private NGOs, is a good start.

Policy makers, however, should pay attention to the problems found from this study: course design, employment consultation services, and subsidy scheme. Further, the training program should be expanded to all digital disadvantaged people. Similar to the highway systems that might

first look like a big budget for the state, the subsidized training program will, in the long run, transform the entire society to an information society that enjoys information super highway.

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非政府組織與數位落差之縮減 - 資訊軟體人才職業訓練之研究

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中文摘要

自從美國 NITA 於 1995 年發表的「Falling Through the Net」報告揭露數位落差所可能帶來的社會不公平現象以來，數位落差的研究主軸似乎已由著重在資訊硬體設備及連線取得，轉移至資訊內容及資訊使用的訓練。本文探討在政府補助之下，非政府組織所提供的訓練課程「資訊軟體人才職業訓練」，是否可以提供「資訊弱勢族群」另外一個縮減數位落差的管道。研究發現，非政府組織所提供的訓練課程，在地點便利性及提供更多就業機會方面，得到肯定。但是研究也發現，政府及提供訓練的非政府組織，應該特別注意政府補助計畫政策及非政府組織所提供的訓練課程安排方面所帶來的負面問題，以便提高這類補助的訓練效果。

關鍵字：數位落差、非政府組織、訓練、政策。