An Initial Assessment of the Philippines' Preparedness for E-Learning

ARNIE C. TRINIDAD*

Any attempt to institutionalize e-learning will prove futile without first attaining its vital requisites. An initial assessment of the Philippine's e-learning stature both depicts a gloomy and a challenging scenario. Three crucial domains need further reinvigoration: technology and infrastructure, educational standards and literacy and government-private sector teamwork. Access to phone lines, computers and the Internet cannot substitute to the greater need to develop the academic well-being of Filipino students. E-learning requires higher-order skills and analytical thinking. Raising the quality of training of teachers and students is a must to maximize the promises of Internet technology. The apparent lackluster performance of the Department of Education (DepEd) in providing the basic needs of primary and secondary high schools and the low standard of education seem to be steps backward to this end. Emphasis should be given on raising the students' English language proficiency and 'digital fluency'. The public sector cannot carry the burden of forming an e-learning society alone. The government's collaboration with the private sector in programs such as the PREGINET, Fit-Ed programs and the ASTI- and PLDT-sponsored projects testifies to this truth.

> The knowledge revolution will power the new global economy, reshape many of our institutions-*particularly education—and touch every aspect of our lives.*
>
> —Davis and Botkin (in Mason 1998)

The Internet is an empowering tool that promises to "school the illiterate, bring job training to the unskilled, open a universe of wondrous images and knowledge to all students, and enrich the understanding of the...learner".[1] It offers the wide public an unparalleled access to a vast store of information and knowledge. The Internet is considered a harbinger of intellectual and social advancement for people, if not a harbinger of social change. The empowerment and enfranchisement of individuals through knowledge and information could spur social change that can break barriers that divide societies and nations. These processes allow people, particularly the poor and disenfranchised, to have the same access to education as everyone else. Pippa Norris writes that "...the Internet promises to level the playing field and strengthen the voice of the voiceless in the developing world".[2]

Another testament to the empowering potential of the Internet pertains to its vast network of information. People no longer have to be passive recipients of pre-packaged knowledge. They can now actively choose what, how much, when, and where to learn and to transform knowledge. It has allowed us to rethink our concept of education because learning is no longer seen as the sole province of academic institutions.

All of this has given rise to the concept of electronic learning or e-learning. Traditionally, e-learning is defined as the delivery of learning through electronic media such as phone bridging, television, video teleconferencing, and satellite broadcast. However, with the Internet, the definition of e-learning has evolved to mean the use of "Web-based or online courses that feature the use of tools such as electronic mail, video-conferencing, electronic bulletin board systems and chat channels, in combination with Web pages and sites".[3] With e-learning, students are no longer bounded by the four walls of the classroom. Learning can be done in the comfort of one's home. People no longer have to rely solely on teachers for education. With the wide array of information available from the World Wide Web, people can school themselves and learn from other people from the world over.[4] We can also see a transformation in the role of school-bound teachers from being transmitters of learning to facilitators of learning. The concept of lifelong learning can now be made possible, confirming Mitchel Resnick's claim that the Internet-spurred "learning or knowledge revolution" will "transform how and what people learn throughout their lives."[5] People need not be fettered by the school-imposed calendar and curriculum because education can be received whenever and wherever people want to learn.

With all these touted benefits, e-learning has become a central priority of many governments and academic institutions. They are now racing to harness and capitalize on the Internet as a learning tool. It pays to invest in e-learning because information and communication technologies (ICTs) have become an essential part of the solution to poverty and other socioeconomic ills. It can provide opportunities for "capacity-building" and "people empowerment."[6]

In light of this, what is required is an idea of the Philippines' preparedness for e-learning. Since e-learning has just started to gain a foothold in the country, few studies have been done. Most of the studies only assess the availability of infrastructure and equipment (e.g. Internet technology) but have not looked into other factors that affect people's

preparedness for e-learning such as educational and personal issues. This paper aims to make an initial assessment of the country's preparedness for e-learning by surveying, compiling, and discussing literature and studies that have been written on technological and educational issues directly or tangentially related to the topic. It only uses secondary data culled from various research, some of which is not necessarily related to e-learning. This paper examines issues related to the availability of technology and infrastructure, educational standards, literacy, and students' English proficiency. It deals also with the efforts of the government and the private sector in preparing the country for e-learning. The technological and educational issues discussed here do not constitute a definitive list of prerequisites for a country's preparedness for e-learning. This paper only provides an overview and does not critically gauge the country's preparedness for e-learning. More rigorous studies need to be done to gauge the preparedness of the country. Hopefully, the paper will lead researchers to craft empirical studies about the subject.

Obstacles to e-Learning Preparedness

No one can deny the benefits that Internet technology and e-learning offer to peoples and nations. Realizing such potential of the Internet, the Philippine government formed the Information Technology and Electronic Commerce Council (ITECC) in 2000, which acts as the highest policy-making body on information technology. ITECC's mandate includes leading "the Philippines' ICT industry...by providing a clearly defined direction in [information technology]" and using "all the necessary and available resources of both the public and private sectors, utilizing the skills and talents of the Filipino people to their utmost capabilities to achieve [the government's] vision of an electronically enabled Philippines, capable of participating in and contributing to the global new economy."[7] The creation of the body can help the country overcome the numerous impediments to the harnessing of Internet technology to educate and empower people. The digital divide poses as the most insidious and most serious impediment to e-learning.

The following section offers a broad discussion of the obstacles to the Philippines' bid to become an e-learning society. Specifically, it discusses the factors that cause the current digital divide.

The Digital Divides

The digital divide refers to the "gap between those who can effectively use new information and communication tools, such as the Internet, and those who cannot."[8] Pippa Norris qualifies this further by identifying three types of digital divides: the *global divide* which refers to the "divergence of Internet access between industrialized and developing countries"; the *social divide* or "the gap between the information rich and information poor within each nation; and the *democratic divide* which refers to the difference between those who use and do not use digital resources to engage, mobilize, and participate in politics and the public life."[9]

As a developing country, the Philippines is no stranger to these digital divides. The Information Society Index (ISI) developed by the World Times and the Data Corporation (IDC) ranks the Philippines 48th among the 55 nations surveyed in terms of the country's ability to access and absorb information and information technology. The ISI measures, among other things, 'information capacity and wealth' including computer infrastructure (e.g. PCs installed per capita), information infrastructure (e.g. telephone lines per household), Internet infrastructure (e.g. business Internet users per non-agricultural workforce), and social infrastructure (e.g. tertiary school enrollment).

The Philippines' mediocre ranking highlights the current global divide. The country lags behind in terms of PC and landline telephone ownership ratio, Internet connectivity, and social infrastructure. The situation underscores the stark division of what Norris describes as information rich countries such as the United States, Sweden, Norway, UK, Canada, and Germany and information poor regions such as countries in South Asia, Africa and the Middle East.[10] The Philippines is not only trailing behind the Western countries but also behind countries within the Asia-Pacific region. For instance, while the Philippines ranks 48th in the index, neighboring countries such as Singapore rank ninth, Japan 11th, Hong Kong 15th, Taiwan 18th, Korea 19th, Malaysia 32nd, and Thailand 47th.[11]

Globalization has allowed the unparalleled production of knowledge and ever shrinking global boundaries. Because of the rapid production of knowledge and the dissolution of national boundaries, people have to keep pace with the rapid changes lest they face obsolescence, disenfranchisement, and disempowerment in a globalized world. What is

at stake is not only the survival of the individual but also of the whole country. The economic success of nations hinges on citizens who have access to the latest information. Kante and Savani emphasize the importance of keeping abreast with the rapid development in know-how:

> The world's most successful economies are no longer powerhouses of industry, but rather powerhouses of information. For developing countries to compete in the new, knowledge-based economy, they must provide their workers access to the latest information, regardless of subject.[12]

The social divide, like the global divide, is a function of the poverty situation in the country. Poverty incidence in the 1997 Family Income and Expenditure Survey was pegged at 37 percent of the total population, which roughly translates to 27.8 million Filipinos living below the poverty line.[13] The grinding poverty robs the populace of great opportunity to engage in the wired world. A sizeable segment of Filipinos may not be reaping the purported benefits of the Internet. They can only buy their basic needs with nothing left for "empowering" tools such as computers and the Internet. Only the rich and moneyed classes have access to the technology. For those who have access to technology, only a handful may really be using it to "engage, mobilize, and participate in politics and the public life."[14] Interestingly, the Internet is described as the fuel and the vehicle for intensifying demand for and supporting the spread of genuinely transparent and participatory and more efficient systems of government at both the national and global levels. It can change the fragile institutions, weak services and unaccountable officials by "offering greater citizen input into decision-making and better social services for all."[15] Furthermore, ICTs help link civil society networks around key issues. They can also make government services cheaper, more efficient and more accessible. However, the democratic divide produces a paradox. Although the Internet promises to give voice to the majority, expose them to varied political thoughts, convictions, and movements, and allow them to actively participate in governance and political life, some fail to exploit this potential for reasons ranging from disinterestedness, lack of access to the Internet, scant of financial resources to lack of good education. Norris makes a salient point:

> The Internet appears to be an egalitarian world, where everyone can express himself or herself, mobilize, and organize politically, but cyber-

pessimists stress that technological resources are far from equally distributed. In this view, the Information society will amplify the voice of those with the interest, skills, and knowledge to make use of new forms of communication, further marginalizing an under-class in public affairs.[16]

Technological Factors

Intimately related to the digital divide are issues of the availability of and access to technology such as computers, the Internet and telephone lines. No discussion of a country's preparedness for e-learning is complete without taking into account the availability of these basic resources. Further, the unavailability and inaccessibility of these essential tools can be seen are an unmistakable and literal manifestations of the digital divides.

Telephones Lines. The most basic requirement for Internet connectivity is a telephone line. Bosnell reports that only 3.06 million Filipinos or four percent of the population have fixed telephones lines.[17] It means that hardly anyone will have the opportunity to access the Internet at home. The remaining 96 percent of Filipinos, if they are knowledgeable of the technology, will have to rely in computers in the office or Internet cafés. Of the four percent fixed telephone line owners, 49 percent are found in Metro Manila, 15 percent in the Southern Tagalog Region, and 36 percent are dispersed throughout the rest of the country.[18] This, however, is not due to lack of telephone infrastructure. There are enough available phone lines and majority of them have yet to be used. One study estimates that only 44 percent of available phone lines have been utilized.[19] This is because many of the phone lines were installed in places where they are not needed or where few people can afford the services and monthly fees. Very few Filipinos own fixed telephone lines because of the costly installation and monthly charges. For instance, the installation charges of the Philippine Long Distance Telephone Company (PLDT) ranges from P1,200 or $22 to P1,999 or $37. The price is relatively expensive considering the minimum monthly wage of workers (more or less P8,000). The labor wage even goes lower in less urbanized areas.

Data from the National Telecommunications Commission (NTC) seem to corroborate the decreasing interests of Filipinos to secure a landline connection. The sudden rise in phone subscriptions between 1996 and 1997 was followed by the yearly decrease in subscription percentage.

Table 1: **Growth in Wireline Telephone Service**

Year	Number of Main Lines	Percentage of Increase/Decrease
1996	3,352,842	
1997	5,775,556	72.76
1998	6,641,481	14.99
1999	6,811,616	2.56
2000	6,905,962	1.39
2001	6,938,762	.047

Source: NTC, no date

At first glance, the marginal yearly growth of fixed telephone line subscriptions after the 1997 boom appears as a normal function of saturation. However, this might not be the case if one considers the low subscription numbers. Seven million people represent only 10 percent of the population, which means only one in 10 Filipino households owns a telephone line. This is far from a case of saturation. To understand this better, we must contrast this with the growth of cellular telephone subscriptions. Table 2 shows the growth of cell phone subscribers from 1997 up to 2001.

The growth of mobile phone subscription has outstripped subscriptions to fixed phone line.[20] PLDT reports in 2001 that there were 2.097 million landline subscribers compared to 6.37 million cellular phone subscribers.[21] The consolidated subscription figures from NTC (see Table 2) are even more telling. Between 2000 and 2001, cell phone subscription doubled compared to the .047 percent growth in landline telephone subscription (see Table 1). Many attribute this to the relatively cheap monthly charges of cell phones with the use of prepaid cards which allow people to control their communications expenditure. Unlike telephone lines that have fixed monthly rates, people only incur expenses for the text messages and calls they make.

The growth in wireless technology is important to the Philippines' effort to be an e-learning society. Rapid developments now allow Internet access using cellular phones. However, this remains a pipe dream because many of the mobile phone models that allow for Internet connectivity are costly. Also, in their current format, mobile phones are not as powerful compared to PCs in terms of Internet connectivity and capacity.

Table 2: **Growth in Cellular Mobile Telephone Service Subscription**

Year	Number of Subscribers
1997	1,343,620
1999	2,849,880
2000	6,454,359
2001	12,159,163

Source: NTC, no date

Computers. In the last Functional Literacy, Education, and Mass Media Survey or FLEMMS conducted by the National Statistics Office (NSO) in 1994, only 1.2 percent of the 12.7 million households it surveyed owned computers.[22] Current estimates put the population owning PCs at around 2.7 percent.[23] Estimates are used because accurate data on computer ownership are not available. Raymond Ricafort, owner of Netopia, an Internet café chain in the country, notes that:

> There are currently two million PCs being used in the country today. Accordingly, roughly 500,000 PCs are "old and inefficient," about one million PCs are used in private firms and government agencies, while approximately 500,000 are spread over Internet cafes and individuals nationwide.[24]

The computer ownership projected to have increased since 1994 is thought to be marginally significant. This is because prices of computers, although they have drastically decreased over time, remain unaffordable to regular wage earners. Lallana attributes the low ownership of computers in developing countries to the costly price of buying personal computers, securing phone lines, and subscribing to the Internet.[25] True enough, one has to pay at least P10,000 to own a PC, which is extremely expensive considering the nominal and real per capita income of an average Filipino worker. In 1997, the nominal and real per capita income were PhP27,105 and PhP19,799, respectively.[26] These were adversely affected by the series of economic and domestic crises since 1997. Understandably, Filipinos channel more their expenses to meet basic necessities such as food rather than on education or other "not-so-basic-expenses." The 1997 statistics show the priorities Filipino families in terms of expenditures: 44.2 percent went on foods; education was allotted a mere 3.7 percent;

and health expense was allotted 2.2 percent. The little money spent on health and education implies that people may have less money to spend for "non-essentials" such as computers or Internet use. This is also true especially if people view education in traditional terms of having a teacher who delivers lectures in school instead of viewing the possibility of self-learning with the Internet as the teacher. With this mindset, people would hardly invest in the Internet as a tool for educational and intellectual advancement because they see it as a luxury.

Statistics also show that poverty in rural communities is higher than urban settings, which explains why more people from urban areas (two percent) own computers compared to those in rural areas (0.3 percent).[27] Poor families struggling to make ends meet simply cannot own computers whose costs may already equal their annual income.

Internet. The number of Filipinos getting connected to the Internet leapt from 320,000 in 1999 to 680,000 in 2000.[28] These figures mostly account for dial-up subscriptions. Only a small number of Filipino Internet users subscribe to digital subscriber line (DSL), cable connections, and fixed wireless broadband systems. Bosnell reports that there are 10,000 available DSL lines in the country.[29] Minges, et al., on the other hand, states that there are 3,000 DSL subscriptions in Metro Manila.[30] This is not surprising because it is more expensive to get a DSL or cable connection compared to the relatively cheap and more commonly used dial-up connection. Moreover, these technologies require newer computer models which the majority of Internet users cannot afford to buy. Since a broadband connections is expensive, most subscribers are business entities which can afford to pay the monthly subscription charges.

Although there are still a meager number of Internet subscriptions using dial-up and broadband connections, we should take note of its rate of increase. From 320,000 subscribers in 1999, subscription doubled after a year to 680,000. This represents a robust growth in the number of Internet users in the country. These do not include people who have access to Internet at home using Internet prepaid cards. There are indications that the numbers are constantly increasing based on the number of available Internet prepaid cards competing in the market.

Lallana reveals that increasing numbers of Filipino access the Internet through the estimated 1,500 to 6,000 Internet cafes all over the

country.[31] People prefer to use the Internet in cafes because of the relatively cheap hourly rates, which can range from P10 to P150 per hour depending on the speed of the connection.[32] It is the most viable way to access the Internet because people no longer have to buy computers or pay monthly subscription fees. They only spend whenever they use the Internet. It is assumed that the number of Internet users through cafes is on the rise. Ricafort reports that his chains of Internet cafés are providing services to roughly 700,000 clients per month.[33] He adds that within the next two to three years, *Netopia* plans to open some 270 new branches nationwide. The dynamic growth of the chain of Internet cafés augurs well for e-learning. It implies that more people will have access to the Internet. And access to the Internet will not only be limited in Metro Manila but in other cities as well.

In 2001, it is estimated that two million or two percent of the Philippine population actually used the Internet. Although it is much lower than the reported rate of 25 percent in Singapore and 15.8 percent in Malaysia, current trends show a steady increase. Nonetheless, most of those who have access to the Internet are in the more urbanized areas . *Netopia* opens up branches mostly in these areas. Despite the increases in the number of users, we can hardly classify them as a significant leap forward for e-learning.

Using non-random sampling methods, a survey by ACNielsen reveals a lot about how Filipinos use the Internet.[34] Out of 8,000 respondents surveyed online, 95 percent access the Internet to send and read e-mail; 64 percent use it to read the news; 60 percent access it to download software; 50 percent search for jobs, and 49 percent utilize the Web to surf and experiment. People use the Internet mainly to communicate rather than for educational purposes. Hence, the Internet's potential as an empowering educational tool remains untapped. Academic and research-related activities in the Web fell in the eight rank at 46 percent while self-education came in 12th at 36 percent.

The use of Internet technology holds a lot of promise for Filipinos. Broadband technology with high speed connections can be effective tools for education. Slow dial-up connections is a hurdle to the learning of students who are more concerned of the hourly rates of Internet cafés. The initial hurdle of costly charges must be overcome. There is a

decreasing trend in broadband subscriptions. A broadband connection offers a lot of potential if its price becomes affordable.

The increase in the number of Internet cafés provides greater opportunity for people to use the Internet at affordable prices. However, they can hardly be classified as conducive to learning. A quick survey shows that most of the young people who go to Internet shops play network computer games. Furthermore, the speed of Internet connection varies from one café to another. Charges increase as the connection becomes faster.

Educational Factors

The Readiness for the Networked World website offers a useful guide to educational potential. Composed of 19 categories, the guide can be loosely applied to measure preparedness for e-learning, which can help assess a country's readiness for the networked world. It is grouped into four categories: *Networked Learning* (Does the educational system integrate ICTs into its processes to improve learning? Are there technical training programs in the community that can train and prepare an ICT workforce?), *Networked Society* (To what extent are individuals using information and communication technologies at work and in their personal lives? Are there significant opportunities available for those with ICT skills?), *Networked Economy* (How are businesses and governments using information and communication technologies to interact with the public and with each other?), and *Network Policy* (To what extent does the policy environment promote or hinder the growth of ICT adoption and use?).

This section addresses issues involving the first two categories as they relate to educational issues. Discussion on this is important because of the multifaceted nature of the topic that intimately involves technological, educational, and personal issues. While the minimum infrastructure requirements such as telephone lines, cable, computers, Internet connection must be available, they are not the endpoint of e-learning. The issue of preparedness for e-learning is tied to the standard of education being exercised and the range of educational opportunities for the people.

While digital technologies have the potential to enhance education, lack of technical know-how among students hinders it. Students must be taught to use the computer and the Internet, to read and write either in

the vernacular language or in English, to sift through available information, and to read with a critical eye and with a view to a transforming knowledge.

Resnick believes that it takes more than just being computer and Internet literate to engage in e-learning. A person should also be digitally fluent. [35] He must possess reading comprehension skills because much of e-learning is done through reading. The ability to read, write, and understand the English language is a must because majority of the sites' contents are in English. The skill to look at things with a critical mind is also imperative because e-learning involves complex intellectual thinking.

E-learning has its paradox. It promises to school and empower the illiterate and the disenfranchised but people who are deprived of good education may not be prepared for it. The following section looks into the use of IT in schools, the current education standards, the students' English proficiency, and the level of literacy that may affect the people's preparedness for e-learning.

IT in Schools - Information technology (IT) training has a direct impact on people's preparedness for e-learning, particularly, on how competent people will utilize the technology for their benefit. Although the Department of Education (DepEd) gets the biggest tranche of the annual national budget, it hardly meets all the needs of the primary and secondary schools all over the country. The DepEd fails to address the extensive shortage of classrooms, lack of competent teachers, scarcity of textbooks, among others. It is not surprising that majority of schools do not have computers and Internet access. The Internet, if properly utilized, can augment the shortages in textbooks and make teachers competent. As a matter of necessity, the DepEd should provide essential information technology equipment to public schools. Its efforts to computerize public schools all over the country might not be enough. It is estimated that only 31 percent of public schools have PCs, while mere two percent have access to the Internet. [36] For schools that have PCs, there might not be enough units for all students and not all computers are being used for educational purposes. Some of them have been fielded for administrative activities. What was meant for students has been re-channeled for other purposes.

In a nationwide random survey of 100 schools that benefited from the Computerization Program of the DepEd, Victoria Tinio reports that the student-to-computer ratio in those schools ranges from as low as 12:1 to

1,098: 1, with the mean ratio of 267:1 and the modal ratio of 209:1.[37] On average, 267 students vie for the use of one computer. This is not propitious for learning because it is difficult for students to learn, practice and hone their computing skills and use it outside class hours. Of the 100 schools surveyed, only 13 percent have access to the Internet.[38] A more dismal finding was that only nine out of 100 schools allow their students and teachers to have access to the Internet and for a limited time only. Since Internet access is used both in administrative and educational purposes, the time allotted for students is affected. In all likelihood, Tinio's findings reflect the Internet usage situation in public schools.

With the increasing number of Internet cafés in the country, it will be interesting to see whether teachers and students access computers from these places. There is a view that they do not because it poses an added expense to them. Moreover, many teachers do not know how to use the Internet, let alone know its potential for education. Hence, they would never assign technology-mediated activities to their students.

Most of the schools surveyed use the computers mainly for their Technology and Home Economics (THE) classes. Students are taught only of the basic computing skills such as word processing and spreadsheet making. This is expected since they are part of the curriculum prescribed by the DepEd. This effort by the DepEd should not be belittled. Nonetheless, it would be better if the DepEd integrated computer literacy education in all classes. It could also tap the private sector in the computerization of public schools in the country. In the absence of computers, public school teachers are compelled to formulate creative ways to teach ICTs. At the Parang National High School in Marikina City, teachers noted that when the school was still waiting for the arrival of donated computers, they could only show their students pictures of computer hardware and ask them to identify the parts.[39] While computer education is included in the public high school curriculum, the majority of Philippine public schools still do not have computers. Sadly, Filipino public school students have yet to learn the most basic computing skills and receive competent ICT instruction from their teachers. Academics in the West are already preparing their students to be "digitally fluent" for them to "transform information [available from the Net] into knowledge and manage that knowledge."[40]

Minges reveals that the government neither has a master plan for ICT use nor policies for ICT infrastructure and curriculum for elementary

students.[41] In high school, ICT education is only included under the THE subject. It only covers one or two quarters of the school year and usually taught in the third and fourth year levels. The teaching of computer education only in the third and fourth year levels in public schools puts students already at a disadvantaged position. How much more with the absence of necessary computers? Students who live in countries with high access to computers usually start learning computing skills early in their elementary grades. When they reach high school they are already considered as computer and Internet literate. They become proficient enough with its use that it becomes part of their everyday routine. Teachers and students in these countries use the technology to enhance the learning environment. Not only do they use the technology for research or word processing, they also use the World Wide Web to post school projects. In such a set up students are not only passive recipients of learning. They also become knowledge producers, which is an important component of digital and lifelong learning age. Exchange of ideas among students and teachers is also encouraged to foster collaborative learning and allow a multi-perspective thinking among students. Unfortunately, the majority of Filipino public school students do not have such opportunity.

Tinio makes an important point in her essay,

> ...if these machines (computers) are to be used predominantly for computer literacy training...then it is a sad waste of a lot of technology muscle. If on the other hand, technology use is envisioned as a strategy to effect positive changes in pedagogy towards better student achievement across all subject areas then the benefits reaped from the use of the technology will outweigh its considerable cost.[42]

Much as we want to speed up the process of using technology in education, it cannot be applied immediately because students only learn to use computers relatively late in life. There is no doubt that competency may be compromised if ICT is taught in the latter years of high school and with the multifarious problems of ICT education in the country. Needless to say, the earlier Filipinos are taught to use computers and the Internet, the more fluent, proficient, and comfortable they will be with the technology and the better the chances that they will use it to enhance their learning. But students have to start somewhere, late as it may be. They have to start with learning basic computing skills. The role of technology in pedagogy would come once the students have achieved basic computing competency.

What is most disturbing among Tinio's findings is that over half (52 percent) of the schools claim that their teachers only have some basic computing skills while some 74 percent claim that their teachers have little or no knowledge at all in using the Internet. These statistics are alarming because teachers cannot inspire students to enrich their learning using the technology that they themselves cannot use.

There are numerous Internet resources available for teachers such as those from School.Net, Learnlink, and the Global School House. Teachers can learn pedagogical skills and share lesson plans with other teachers around the globe. These resources can be accessed by everyone. These can augment the paltry educational resources in the country such as books, videos, and CD-ROMs. Filipino teachers who do not have the necessary Internet skills are deprived of the opportunity to access these vast resources which could adversely affect the quality of their teaching.

The Standard of Education and English Proficiency - Theoretically, people who are properly taught in school have better chances of developing lifelong learning skills, which is a necessary skill for e-learning. This is one of the things that must be examined when considering a country's e-learning preparedness. Tinio stresses that when there are technology-driven changes in society and economy, schools must ensure that learners possess the competencies to wield these new information and communication tools productively [and] must equip learners with the critical and analytic tools necessary to live and flourish in an information-saturated environment. Unfortunately, education in the Philippines is falling short of this goal.[43] According to the ESCAP, "the quality of educational services and facilities is far from uniform in the Philippines, with severe access problems faced in many rural areas and low standards of education faced across the nation."[44]

Yvonne Chua of the Philippine Center for Investigate Journalism (PCIJ) reports that "the public school system churns out graduates who are totally unprepared for [the] complex world" because of the lack of teaching competence of many teachers whose degrees do not correspond to the subjects they teach."[45] The quality of teachers is only half of the problem. Chua notes that public schools in particular are "weighed down by...sheer size." She observes that the public school system has "poured its energies on widening access rather than upgrading the quality of schooling." They are filled with teachers handling up to 80 to 100 students per class and

there is a perennial shortage of books, desks, and even classrooms. The quality of education affects the quality of mind of the students.

One proof of the worsening quality of education in the country is the dismal performance of students in international aptitude tests. Sison reports that the "Philippines ranked third to the last in elementary Math and second to the last in elementary Science in an international test taken by half a million elementary and high school students in 45 countries."[46] There may be numerous factors which can explain the low test scores. The state of education in the country is a major factor. Without a strong educational background, students cannot embark on e-learning.

Many educators, including politicians, complain about the declining proficiency of Filipinos in the English language. This is exacerbated by the dwindling numbers of competent English teachers. The 68 percent English Internet sites pose a big problem for Filipinos' preparedness for e-learning.[47] Taglang even offers a higher estimate, saying that around 87 percent of the documents found in the Internet are in English.[48] A person who can hardly understand the English language cannot maximize the available network of resources in the Internet. They maybe able to access the resources but they definitely cannot definitely analyze the texts in a critical manner. The hegemony of the English language in the Internet is not without disadvantages. However, little can be done about this at present. For this reason, it is imperative to create more sites in Filipino so that they can be more accessible to greater numbers of local Internet users. Otherwise, the government must equip people with the necessary linguistic and intellectual skills to be prepared for e-learning.

For Tinio, the networked world requires people to have the ability to contextualize facts and derive their meaning within specific contexts. "Learners must develop three foundational skills: 1) how to find information; 2) how to determine if what is found is relevant to the task at hand; 3) how to determine if the relevant information is accurate."[49] However, these might be difficult to develop among Filipino students because of sub-standard public education, bloated student numbers, dwindling numbers of competent teachers, lack of computers and access to the Internet, and the relative delay of the introduction of the use of computers to students. These foundational skills can be properly taught with the use of reflective teaching that knows how the available digital technologies can enhance learning. However, reality shows that the use of technology in classrooms

is "limited to teaching the tools rather than using the tools to teach."[50] This happens because there are no available computers for them. They only start learning basic computing skills only during their third or fourth year in high school.

The more important skill of using the Internet technology, such as searching the World Wide Web for information, ascertaining or critiquing the reliability and usefulness of this information and transforming the information available from the Net into new knowledge has yet to be taught to students . The DepEd still needs to fully integrate these into the school curriculum and train teachers in ICT technologies.

The DepEd has been coordinating with private institutions to fund and host the training of school teachers. In 2000, the Department of Education together with the Department of Science and Technology (DOST), the University of the Philippines National Institute of Science and Math Education (UP-NISMED), and Intel embarked on the *Intel Teach to the Future Program*, which trained over 30,000 teachers in 16 regions on how to effectively integrate the use of technology in education. According to the report filed by the Metropolitan Computer Times, the *Intel Teach to the Future Program* is part of "a worldwide education initiative created to address the barriers teachers face in effectively applying computer technology to improve student learning".[51] The program enables teachers to train other teachers how to integrate technology into their day-to-day lesson plans and incorporate the use of the Internet, Web page design, and productivity software to encourage higher-order thinking and creativity in their students.

Literacy - One of the advantages of Internet technology is that it can translate a purely textual presentation into images for better comprehension. What was only possible as a 2-D dimensional illustration can now be represented for greater clarity using 3-D illustrations, animation, and sound bytes. The technology allows people to better understand and learn abstract concepts. However, the wealth of information available from the Net is still largely textual. People need to have reading and comprehension skills to process the available information. Literacy plays a big role in e-learning since majority of the Web sites are meant to be read. Filipinos can gain in engaging in e-learning given the high literacy rates and despite the issues of Internet access and low quality of education in the country.

In 1989, the simple literacy rate calculates was at 89.8 percent while functional literacy was calculated at 73.2 percent.[52] In the last Functional Literacy, Education, and Mass Media Survey conducted by the National Statistics Office (NSO) and the DepEd, it is reported that simple literacy increased by 4.1 percent to 93.9 percent in 1994.[53] Functional literacy increased to 83.8 percent by 1994. Disparities can be observed such that there are more literate individuals in urban than rural areas. This implies that people in urban areas may have better access to education and might be better equipped for e-learning.

The high literacy rate augurs well for e-learning. But e-learning requires more than just a simple and functional understanding of texts. Taglang states that the "vast majority of information on the Net is written for an audience that reads at an average or advanced literacy level."[54] Because of the sheer number of resources available, people should know how to discriminate the types of information according to their value and reliability while engaging with them in a critical manner. Texts found in the Internet can be complex or even technical. Other things to be considered are the issues of English language proficiency as well as the people's ability to effectively use and adapt the technology. There is a need for other measures of literacy other than the FLEMMS to gauge people's preparedness.

Related to the literacy issue are the reading habits of people. The FLEMMS survey of 1994 reveals some disheartening data that temper the initial euphoria of having high literacy in the country.[55] Only 36.1 percent surveyed actually read books. There was a marginal increase of 0.3 percentage points when FLEMMS was conducted in 1989. The actual percentage of book readers may even be lower in reality because part of the sample surveyed included children in grade school and adults who read required textbooks and readings in class. One cause of worry is that Filipinos might abandon reading after they finish school. Of the few who read books, there is no data whether they read for pleasure or for learning. There is a need to find out the reading habits of Filipinos to know their readiness for e-learning.

Interestingly, television, radio, and VCR, posted considerable gains in the last FLEMMS survey. In 1989, only 48 percent watched television; by 1994, it jumped to 56.7 percent. The survey also reveals that eight out of 10 Filipinos listen to the radio. The radio and television hold a lot of

potential as educational tools for Filipinos although few TV and radio programs can be classified as educational. We can deduce that the Internet can have an appeal to many Filipinos because of its visual and aural features. But again, it depends on whether people can adapt or will have access to the Internet. Few electronic educational materials such as CD-ROMs, educational videos, and the like are available and they often come at costly price.

The Future of e-Learning in the Philippines

There is no question that e-learning is the wave of the future. It promises to empower the marginalized sectors of society. It can be used to retrain individuals and improve their know-how throughout their lifetime. E-learning, in other words, can help people become lifelong learners to cope with the requirements of the knowledge and information age. Giddens emphatically says: "Labor market changes will be increasingly dynamic and education can no longer be static. Personal development will become very important and 'education must be a whole-of-life experience." He adds that our age needs "individuals who are able to read, understand, analyze and, where appropriate, act knowledgeably on the information they can obtain and, indeed, require to engage with the wider world." Because of "the reflexive, and...dynamic, nature of globalization, people need to engage in a lifelong education in order to participate fully in social life." [56]

The prospects appear hazy for e-learning in the Philippines because of the different digital divides the country faces. Almost 40 percent of its population live below the poverty line and only the moneyed class has access to computers and information technology. Private schools are the only ones which provide ICT education to their students. Only the affluent can afford to buy the necessary computer hardware to access the Internet. Public high schools, where the majority of Filipino students are enrolled have barely enough computers for their students. People find it difficult to engage in e-learning if they are not educationally prepared and proficient in reading and understanding the English language.

But the government has not been totally remiss with its duties. It has been disseminating information about e-learning across the country. The government acts in tandem with the private sector that provides funding for its projects. Partnerships with the private sector in relation to the

National Telecommunications Commission's (NTC) project to establish communication facilities in different towns all over the archipelago. The NTC endeavored to put up at least one telecenter and two computers with Internet access in 278 unserved and underserved towns.[57] This is a laudable preliminary effort. Nevertheless, two computers are definitely not enough to service the needs of the growing student population in a particular area. The government should go beyond providing the necessary equipment. It should also train people to use computers and the Internet. A more important precursor in teaching students in the use of computers is the training of teachers in basic computing skills and in effectively integrating the technology in teaching. In the long term, when the use of the Internet widens, the government and the private sector should aim to provide more computers and telecenters and to tap the service of Internet cafes.

The government also collaborated with the Foundation for Information Technology Education and Development (FIT-ED) and Coca-Cola Export Corporation. The Coca-Cola Export Corporation's *ed.venture Program* allowed for the donation of computers, Internet connectivity, training of teachers, and post-training support services to 15 pilot high schools all over the country—12 public high schools in the Visayas and three in Metro Manila—in 2001. Some 35 other public high schools also stand to benefit from the program between 2002 and 2004.

The University of the Philippines Open University was used to train teachers the basic computing skills and how to integrate the technology in their teaching. Teachers were asked to reflect on how technology can enhance their teaching and the practical ways to achieve this in the classroom. Teacher-participants themselves engaged in e-learning through telecollaboration efforts. It exposed them to different possibilities of using ICTs in educating their students. Although computer education is only given in Technology and Home Economics classes, teachers from other disciplines such as English, Math, Science, and other subjects participated in the training. The project does not only involve the donation of computers but it also provides training for the teachers. In the past, computer donations from various sectors have reportedly gone to waste because the teachers did not know how to use them. Training the teachers can resolve this problem.

However, certain barriers still exist that may hamper the goal of transferring IT knowledge to teachers and initiating e-learning to students. Some teachers report that their school principal gave them limited time to practice with the computers.[58] The tutors also reported that some teachers were not allowed to use the computers at all outside the training time. Without practice, teachers will have difficulty getting accustomed to the technology. Students may also experience the same problem. It appears that school administrators are more concerned with maintaining the condition of the computers or keeping their electricity costs at bay.

Another problem is that the donated computers hardly meet the requirements of majority of the students. Student-to-computer ratio remains dismal because there are not enough donated computers. Teachers in Parang National High School, one of the beneficiaries of the FIT-ED project, report that some 70-80 students per class have to share the 12 computers donated to the school. Of the 12 computers, only 10 can only be used by the students because one computer is exclusively intended for the teacher's use and the other one was made a network server. Seven to eight students are sharing one computer for the 40-minute THE class. It is doubtful that all students will have the opportunity to use the computers.

The initiatives of the private sector to cooperate with the government in propagating e-learning in the country are a big step. It is also recommended that the government set-up Internet cafes or libraries that people can have access to Internet for free or at a minimal fee for educational purposes. The government has started doing this through ITECC. The Information Technology and E-Commerce Council (ITECC) is "developing several models for a rural based electronic kiosk, a major project that would have community-based e-centers built in areas that do not receive enough assistance from the government."[59] The ITECC has already installed computer kiosks in five pilot areas, including two in Agusan del Norte, two in Lanao del Norte, and another one in Bukidnon.

The government's research and development projects involve the cooperation of PLDT, UP and the Department of Science and Technology (DOST) through the Advanced Science and Technology Institute (ASTI). The project states that "under the agreement, PLDT, UP, and ASTI will undertake projects that will include rural telecommunications, Internet

Protocol version 6 (IPv6), mobile telecommunications, broadband networking, toll on-line billing system, and wireless communications.[60]

Another notable project of the government is the Philippine Research, Education, and Government Information Network (PREGINET). It is sponsored by ASTI and involves the creation of a nationwide online research network by establishing a digital science library that would house all research materials from the academe and private institutions. It is a nationwide broadband network that would link academic, research, and government institutions in the Philippines. The project will be implemented from August to November 2003.[61] It would definitely help disseminate and propagate scientific knowledge to the academic community. The government has also passed important laws in e-commerce and governance to facilitate transaction with the government through the use of technology. There is a need to push e-learning more vigorously because only an Internet and technology literate populace can appreciate the government's effort toward e-commerce and e-governance.

As for English literacy, the Macapagal-Arroyo government has pushed the reverting the medium of instruction in schools nationwide from Filipino to English. Different sectors are still debating on the merits and feasibility of this decision because of the festering question of nationalism. Teachers may not really be fully competent to teach in English. Nonetheless, the decision of the Arroyo government may help Filipinos to be more literate in English, which can eventually help them to be e-learners. But the preparation should go beyond simple or functional literacy in English. People should also be trained not only to become critical thinkers but also thinkers in English. If it cannot be done, the government should set-up websites with vernacular or Filipino content so that they can be more accessible and more relevant to the masses. Universities and academic communities have an important role in this area. They can create websites or translate important academic literature from English to vernacular languages. But since this will take time and resources, training students in the English language is still the best solution.

There is a need to upgrade the quality of public education and to elevate the level of thinking and processing skills of the people. Proper education can motivate people to engage in e-learning. The Philippines appears to lag behind in terms of preparing its citizenry for e-learning. However, this should not dampen the current zeal and efforts. Fundamental

preparations are already being set in motion by both the government and the private sector with its myriad projects such as the PREGINET, Fit-Ed programs, the ASTI and PLDT program, among others. The consolidation of efforts should be further strengthened. The government must provide clear-cut plans and sound vision for e-learning in the Philippines. Lastly, the hurdles to the realization of e-learning society in the country are not insurmountable. They should be deemed as challenges for the Philippine government and its citizenry to prepare themselves for e-learning. ❀

Endnotes

1 Ho, 2001.
2 Norris, 2000.
3 1st National Conference on E-Learning, 2002.
4 Mason, 1998: 156.
5 Resnick, 2002: 32.
6 Kante and Savani, 2003.
7 ITECC,2002.
8 Digital Divide Network, 2003.
9 Mendoza, 2001.
10 Norris, 2000.
11 Mendoza, 2001.
12 Kante and Savani, 2003.
13 Henderson 2002.
14 Mendoza, 2001.
15 Brown, 2003.
16 Norris, 2000b.
17 Bosnell, 2002.
18 Minges et al., 2002: 16.
19 Minges et al.,2002:10.
20 Minges et al., 2001: 5.
21 PLDT, 2001.
22 NSO, 1996b.
23 Minges et al., 2002: 27.
24 Orani and Villafania, 2002.
25 Lallana, 2001: 3.
26 Reyes, 2001: 2.
27 NSO, 1996b.
28 Reyes, 2001.
29 Bosnell, 2000.
30 Minges et al., 2002: 25.
31 Lallana, 2001: 11; Minges, 2002; Orani and Villafania, 2002.
32 Mendoza, 2001.

33 Orani and Villafania, 2002.

34 Reyes, 2003.

35 Resnick, 2002: 33. Digital fluency goes beyond the ability to use word processors, electronic spreadsheets and sending e-mail. Resnick uses as an analogy of being fluent in a foreign language. He says, "To be truly fluent in a foreign language, you must be able to articulate a complex idea or tell an engaging story; in other words, you must be able to 'make things' with language. Analogously, being digitally fluent involves not only knowing how to use technological tools, but also knowing how to construct things of significance with those tools."

36 Minges et al., 2002: 37.

37 Tinio, 2002: 12. Some 661 schools from all over the country benefited from the Computerization Program of the Department of Education in 1996. The schools were chosen based on the following criteria: "1) it must be a high-performing school (as indicated by overall performance in the National Secondary Achievement Test); 2) must have a full-fledged administrator; 3) must receive a share in the a national government budget; 4) must offer "Business Technology (Computer Education)" as a specialization in the 3rd and 4th years; 5) must have electricity and an air-conditioned room to house the computer package; and 6) must be recommended by the Division and Regional Offices.

38 Tinio, 2002: 15.

39 Trinidad, 2001.

40 Resnick, 2002: 36.

41 Minges, 2002: 37.

42 Tinio, 2002: 27.

43 Tinio, 2002: 3.

44 ESCAP, 2000: 18.

45 Chua, 2001.

46 Sison, 2001.

47 Laliana, 2001: 7.

48 Taglang, 2003.

49 Tinio, 2002: 3.

50 Tinio, 2002: 26.

51 Metropolitan Computer Times, 2003a.

52 Doronila et al., 1998.

53 NSO, 1996a. Simple literacy refers to people's ability to read, write, and understand a simple message in a language or dialect. Functional literacy, on the other hand, means that a person can read, write, comprehend, and make simple arithmetic calculations in an expanded sense.

54 Taglang, 2003.

55 NSO, 1996b.

56 Giddens in Evans and Nation, 1996: 173.

57 Ho, 2001.

58 Trinidad, 2002.

59 Metropolitan Computer Times, 2003b.

60 Metropolitan Computer Times, 2003c.

61 Metropolitan Computer Times, 2003d.

References

Bosnell, J. "DSL Subscriber Numbers Analysis: DSL Subscribers by Nation." Available at html http://www.isp-planet.com/research/rankings/dsl_worldwide_national_april_2002.html, 2002.

Brown, M. "UNDP is involved in a number of pioneering Democracy and the Information Revolution." Digital Divide Network. Available at html ttp://www.digitaldividenetwork.org/content/stories/index.cfm?key=192, 2003.

Digital Divide Network. Available at http://www.digitaldividenetwork.org/content/sections/index.cfm?key=2, 2003.

Doronila, ML et al. *Evaluation and Impact of Selected Adult Education Programs In the Philippines: Country Paper for the Four-Nation Study on Adult Education Programs.* Quezon City: Education Research Program, UP Center for Integrative and Development Studies, 1998.

_____.*Landscapes of Literacy: An Ethnographic Study of Functional Literacy in Marginal Philippine Communities.* Manila: UNESCO Institute for Education, 1996.

Economic and Social Commission for Asia and the Pacific (ESCAP). "Youth in the Philippines." Available at http://www.escap-hrd.org/youth/youth_philippines.pdf, 2000.

Evans, T and Nation, D.,eds. *Opening Education Policies and Practices from Open and Distance Education.* London: Routledge, 1996.

First National Conference on E-Learning. Manila Hotel, 1-2 August 2002.

Foundation for Information Technology Education and Development (FIT-ED)." Website." Available at html http://www.fit-ed.org/about.html, 2003.

Henderson, C. "Notes on Poverty in the Philippines." 20 August 2002. Available at http://www.apmforum.com/columns/orientseas49.htm.

Ho, Al. "NTC to set up telecenters, computers in countryside." *Philippine Daily Inquirer Interact,* 4 July 2001.

ITECC. Information Technology and e-Commerce Council Website. Available at html http://www.itecc.gov.ph/, 2002.

Kante, C and Savani, V. "The New Frontier in the Developing World." *Gia: Internet Journal of Technologies for the Advancement of Learning and Knowledge* 5, 1 (January–March 2003).

Lallana, EC. "Digital Divide and Digital Bridges in East Asia." Paper presented at the 27th Pacific Trade and Development Conference (PAFTAD 27), Canberra, Australia. Available at http://www.digitalphilippines.org/files/research_5.pdf, 20-22 August 2001.

Mason, R. *Globalising Education: Trends and Applications.* London: Routledge, 1998.

Mendoza, A. "Digital Divide." *Philippine Daily Inquirer,* 10 July 2001.

Metropolitan Computer Times. "Over 30,000 Teachers Trained in Intel Teach to the Future Program." Available at http://www.mctimes.net/2003/ECommerce/20030310/Over_30000_Teachers_Trained_in_Intel_Teach_to_the_Future_Program, 7 March 2003a.

_____. "Rural E-Centers as Future Tools for Public Service." 16 July. Available at http://www.mctimes.net/2003/News/news_20030716-Rural_E-Centers_as_Future_Tools_for_Public_Service.html, 2003b.

_____. "PLDT Inks Deal With Academe, Government for Research Projects." 5 July. Available at http://www.mctimes.net/2003/E-Commerce/20030707/PLDT_Inks_Deal_With_Academe_Govt_for_Research_Projects.html, 2003c.

_____. "ASTI to Establish Online Science Library." 16 May. http://www.mctimes.net/
2003/-Commerce/20030519/ASTI_to_Establish_Online_Science_Library.html, 2003d.

Minges, M. "Measuring the Internet in South East Asia." The Internet in South East Asia.
Available at http://www.itu.int/asean2001/documents/pdf/document-25.pdf, 2001.

Minges, M. et al. "Pinoy Internet: Philippines Case Study." Available at http://www.itu.int/
itudoc/gs/promo/bot/cast_int/79479.pdf, 2001.

National Statistics Office and Department of Education, Culture and Sports. Functional
Literacy, Education, and Mass Media Survey Volume I. Manila: NSO and DECS, 1996a.

National Statistics Office and Department of Education, Culture and Sports. Functional
Literacy, Education, and Mass Media Survey Volume II. Manila: NSO and DECS,
1996b.

National Telecommunications Commission (NTC). "Growth in Wireline Telephone Service."
Available at http://www.ntc.gov.ph/consumer-frame.html, undated.

_____. "Growth in Cellular Mobile Telephone Service Subscription." Available at
html http://www.ntc.gov.ph/consumer-frame.html, undated.

Norris, P. "The Worldwide Digital Divide: Information Poverty, the Internet and Develop-
ment." Paper for the Annual Meeting of the Political Studies Association of the UK,
London School of Economics and Political Science. 10-13 April. Available at http://
www.ksg.harvard.edu/iip/governance/psa2000dig.pdf, 200.

Norris, P. "Democratic Divide? The Impact of the Internet on Parliaments Worldwide."
Harvard University John F. Kennedy School of Government. Available at html http://
ksghome.harvard.edu/~.pnorris.shorenstein.ksg/acrobat/apsa2000demdiv.pdf, 2000a.

Orani, P and Villafania, A. "PC Use Tails Mobile Phone Use in RP." Metropolitan Computer
Times. Available at http://www.mctimes.net/04082002-
PC%20Use%20Tails%20Mobile%20Phone%20Use%20in%20RP.htm, 6 April 2002.

Philippine Long Distance Telephone Company (PLDT). Annual Report, 2001.

Readiness for the Networked World. "Readiness Assessment." Available at html http://
www.readinessguide.org, undated.

Resnick, M. "Rethinking Learning in the Digital Age." In G. Kirkman, ed. The Global
Information Technology Report: Readiness for the Networked World. Oxford University
Press, 2002.

Reyes, M. "Philippines: The number's up for fixed lines." Asia Times Online. Available at
http://www.atimes.com/reports/CG18Ai01.html, 18 July 2001.

Reyes, W. "An Equalizing and Exacting Imperative." IT Matters. 27 January. Available at
http://itmatters.com.ph/features/features_01272003a.html, 2003.

Sison, M. "Scrounging Funds to Finance Public Schools in the Philippines." Inter Press
Service. Available at http://www.unesco.org/education/efa/know_sharing/
grassroots_stories/philippines.shtml, 25 April 2001.

Taglang, K. "Content and the Digital Divide: What Do People Want?" Digital Divide
Network. Available at html http://www.digitaldividenetwork.org/content/stories/
index.cfm?key=14, 2003.

Tinio, V. "Survey of Information and Communication Technology Utilization in Philippine
Public High Schools: Preliminary Findings. Japan; Center of International Technology
Education and Development." Available at http://www.digitalphilippines.org/files/
research_8.pdf, March 2002.

Totanes, S. "Literacy in the Search for Truth: An Historian's View." In Ocampo, D., ed.
Literacy in Multiple Contexts. Quezon City: Reading Association of the Philippines,
2000.

Trinidad, A. Interview with public high school teachers of Parang National High School.
Marikina City, Philippines, January 2002.